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SESSIONAL PAPER No. 29

A. 1923

FIFTY-FIFTH ANNUAL REPORT

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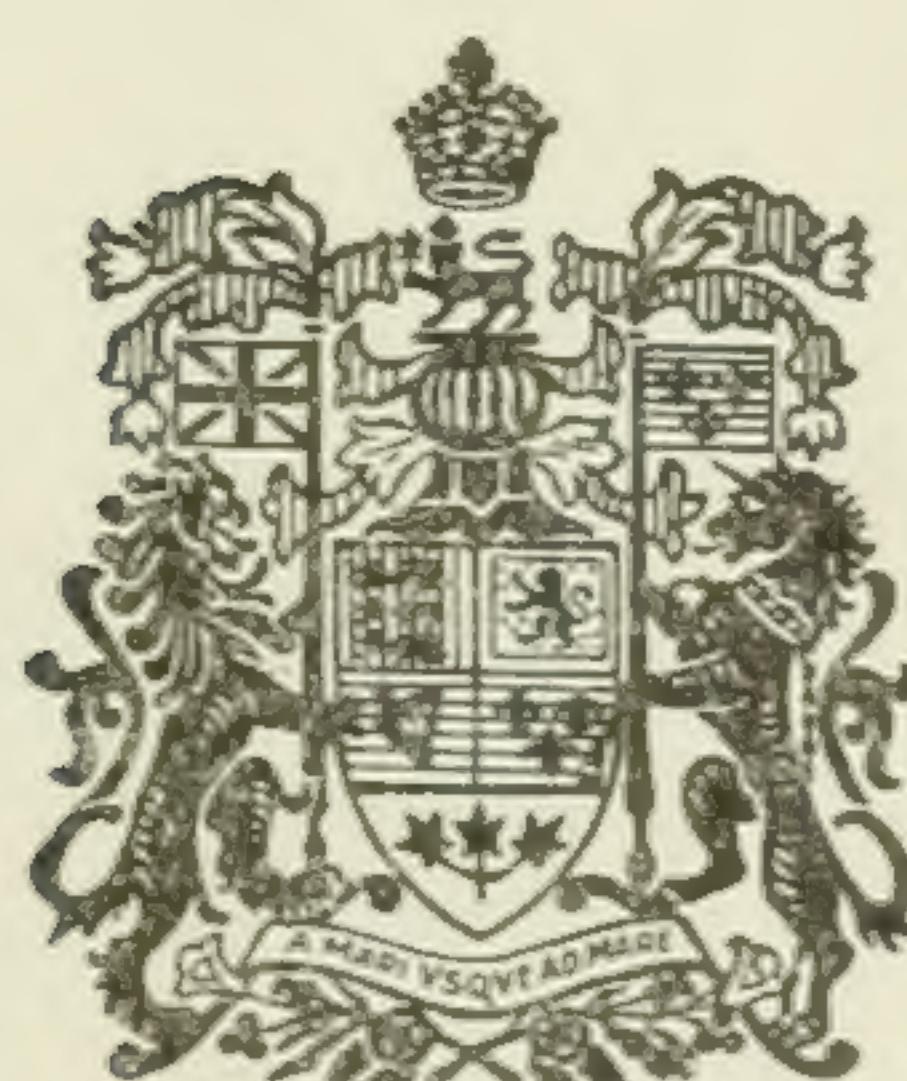
FISHERIES BRANCH

DEPARTMENT OF MARINE AND FISHERIES

FOR THE YEAR

1921-22

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OTTAWA

F. A. ACLAND

PRINTER TO THE KING'S MOST EXCELLENT MAJESTY

1922

[No. 29—1923]

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Minister's Report Covering—

Review of the Fisheries of 1921, and the State of the Fisheries.

Operation of the Fish Inspection Act, and the State of the Fisheries.

Location of the Most and Least Abundant Species.

*To General His Excellency the Right Honourable Lord Byng of Vimy, G.C.B.,
G.C.M.G., M.V.O., Governor General and Commander in Chief of the Dominion
of Canada.*

MAY IT PLEASE YOUR EXCELLENCY:

I have the honour to submit herewith, for the information of Your Excellency and the Parliament of Canada, the fifty-fifth annual report of the Fisheries Branch of the Department of Marine and Fisheries.

I have the honour to be,

Your Excellency's most obedient servant,

E. LAPOINTE,
Minister of Marine and Fisheries.

DEPARTMENT OF MARINE AND FISHERIES,

OTTAWA, July, 1922.

DEPUTY MINISTER'S REPORT

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DEPUTY MINISTER'S REPORT

To the Honourable ERNEST LAPOINTE,
Minister of Marine and Fisheries.

SIR,—I have the honour to submit the fifty-fifth annual report of the Fisheries Branch of the department, which is for the fiscal year ended March 31, 1922. The report deals with the following subjects:—

- Review of the Fisheries of 1921.
- Operation of the Fish Inspection Act.
- Operation of the Meat and Canned Foods Act.
- Fisheries Statistics.
- Bait Reporting Service.
- Scouting for Mackerel.
- Fishing Bounty.
- Fish Culture.
- Fishways.
- Work of the Biological Stations.
- Natural History Observations.
- International Efforts to Replenish the Fraser River.

Appendices to the report include the following:—

- Reports of Chief Inspectors of Fisheries.
- Fisheries Expenditure and Revenue.
- Summary of Licenses issued.
- Entries of United States Fishing Vessels.

REVIEW OF THE FISHERIES OF 1921

The fishing industry was carried on during the year 1921 under the most trying conditions. The marketing of fish and fish products was found to be difficult, and prices fell to a figure which made it unprofitable for fishermen, in some districts of the Atlantic coast especially, to carry on. Production was thus much less than it otherwise would have been. It is not very surprising, therefore, to find that the marketed value of all fish and fish products for the year under review amounted to \$34,931,935. This total, which is the lowest since 1914, is over \$14,000,000 less than for 1920, and \$25,000,000 less than the peak value which was reached in the year 1918.

On the face of it this big decrease is a very serious one, but there are already abundant signs of improved marketing conditions for the product of the 1922 season, and it may be confidently assumed that the annual value of our fisheries has not only touched rock bottom, but will begin to rise steadily if more slowly than under the artificial conditions brought about by the late war. The total value for 1921 and that for 1920 was contributed to by the various provinces as follows:—

	1921	1920
Nova Scotia	\$ 9,778,623	\$12,742,659
New Brunswick	3,690,726	4,423,745
Prince Edward Island	924,529	1,708,723
Quebec	1,815,284	2,592,382
Ontario	3,065,042	3,336,412
Manitoba	1,023,187	1,249,607
Saskatchewan	243,018	296,472
Alberta	408,868	529,078
British Columbia	13,953,670	22,329,161
Yukon	28,988	33,100
	<hr/> \$34,931,935	<hr/> \$49,241,339

ATLANTIC FISHERIES

Cod, Hake, Haddock, and Pollock.—Owing to low prices and poor marketing conditions the aggregate catch of the four kinds named for 1921 was 2,509,928 cwts., against 2,707,059 cwts. for the preceding year. Hake, pollock and haddock, chiefly the last named, were accountable for the decrease. The landings of the Lunenburg Bank fishing fleet were rather less than in the preceding year. This was due to the fact that fewer vessels were engaged in the fishery. The average catch per vessel was actually greater than for many years.

Mackerel, Herring and Sardines.—Mackerel were generally more abundant than in the preceding year. The quantity landed in Nova Scotia, New Brunswick and Prince Edward Island, in the aggregate was approximately 18,000 cwts. greater, but this increase was almost neutralized by a decrease of 15,000 cwts. in the Quebec catch, mainly at the Magdalen islands.

Low prices and a poor demand for smoked round herring adversely affected the herring fishery. The total catch amounted to 637,414 cwts., against 935,122 cwts. for the preceding year. All the provinces shared in the decrease.

The sardine catch of the Bay of Fundy was the smallest for many years. As a result of the still disorganized state of the canned sardine trade the packers had difficulty in marketing the packs of the three preceding years. Consequently, prices were low and fishermen found it unremunerative to operate their weirs.

Other Sea Fish.—The halibut catch was greater by 7,600 cwts., while the catch of swordfish was more than double that for the preceding year. Albacore, flounders and tomcod were taken in about the average quantities.

Shell-fish.—The lobster fishery suffered considerably from inactivity as a result of the low prices, which caused a number of fishermen to cease operating. While the total catch was 6,360 cwts. less than that for the preceding year, some of the provinces actually produced a greater quantity. There was a decrease of 19,000 cwts. in Prince Edward Island, and of 8,000 cwts. in Quebec. Nova Scotia on the other hand produced 17,000 cwts. more, while New Brunswick also had an increase of over 4,000 cwts. It should be noted, however, in connection with the Nova Scotia increase that had it not been for the special fishery season allowed at the end of 1921, which produced 33,000 cwts., there would have been a decrease of 16,000 cwts. as compared with the regular fishing season in the preceding year.

There was a gratifying increase in the catch of oysters. All the provinces show greater catches, New Brunswick especially so. The increase amounted to 4,000 barrels.

Clams also were taken in larger numbers in all the provinces except Nova Scotia. The total increase amounted to 2,777 barrels.

The catch of scallops was approximately 1,500 barrels greater than in the preceding year.

River Spawning Fish.—The salmon fishery, which had been showing diminished catches for some years, suddenly produced an increase of 14,000 cwts. over the catch of 1920. That year, however, was much below an average one.

The smelt fishery was successfully prosecuted, and resulted in an increase of 25,000 cwts. as compared with the preceding year's catch.

The fishery for alewives or gaspereaux gave very meagre results. The catch was not more than about one-third of that of the preceding year. In the Harbour of St. John, New Brunswick, where the bulk of the total catch is usually taken, the fishery was almost a failure.

INLAND FISHERIES

The lakes of the Prairie Provinces produced in the aggregate a somewhat greater quantity compared with the production in the preceding year. There was a decrease in value, however, of \$400,084. Notwithstanding a smaller number of men engaged in fishing, the catch in Alberta for commercial purposes showed a slight increase. An establishment for canning, smoking and salting fish was erected on the shore of lake Athabasca in the summer of 1921, and put in operation daily during the last half of September.

Fewer fishermen operated in Saskatchewan owing to the depressed condition of the markets in the first half of the year. The commercial catch, consequently, was slightly less.

There was an increased catch in the lakes of Manitoba.

The St. John River district in New Brunswick produced a slightly greater catch with a considerably greater value.

PACIFIC FISHERIES

Salmon.—The salmon pack of British Columbia amounted to 602,657 cases of all kinds. This is a little more than half the number of cases packed in the preceding year. The greatly decreased pack was due in a large measure to the lack of demand for the cheaper grades, such as pinks and chums, as a result of the over-supply in recent years. Unfortunately, however, the pack of the more valuable sock-eye was a very poor one. Not only was this the case in the Fraser River district, where dwindling runs of this variety are now noted without surprise, but it was equally so in the Naas, Skeena, Rivers Inlet, and outlying districts of the north. Spring salmon were fairly abundant in some of the northern districts, and the pack of this variety was greater. It was much less, however, in the Fraser River and Vancouver Island districts.

Halibut.—This fishery resulted in the landing of 325,868 cwts., against 238,770 cwts. for the year 1920. Nearly two-thirds of the total landings in British Columbia were made by United States vessels, mainly at Prince Rupert, where catches were disposed of and the vessels outfitted before returning to the fishing grounds.

Herring.—These fish were as abundant as ever on the west and east coasts of Vancouver island. The quantity landed annually varies as a rule with the condition of the markets, and the demand. The catch for 1921 was somewhat less than that for the preceding year owing to the temporary slackness in the demand for dry salted herring from the Orient. The demand for herring cured in the Scotch style was better in the eastern part of the United States. Efforts were made to pack a much larger quantity. A sufficient quantity of fish of the right quality was not secured, however, and the pack, although double that for the preceding year, fell far short of what was prepared for. Several companies operated purse-seines for herring at places within thirty miles of Prince Rupert during the season, and a very considerable quantity was taken. The fish were mainly disposed of for bait.

Pilchards.—These are very abundant on the west coast of Vancouver island. They are mostly canned. The pack of 1921 was only 16,091 cases, whereas the one for the preceding year amounted to 91,929 cases. The smaller pack was due altogether to poor market conditions. New outlets have been recently found for the canned product, however, and it is anticipated that the pack will increase in volume annually.

Other Sea Fish.—In addition to the foregoing, which constitute the chief kinds landed in British Columbia, such varieties as cod, flatfish, smelts, sturgeon, oysters, clams, etc., were landed in the usual quantities. These taken together contribute a considerable part to the total annual value.

Whales.—The market conditions were not such as to warrant the operation of the British Columbia whaling stations during 1921. Consequently there were no whales reported as having been landed.

INSPECTION OF FISH

Inspection of pickled fish and the barrels in which such are packed and marketed, was carried on during the season of 1921, under authority of the Fish Inspection Act as amended in 1920.

Under the original Act, packers of fish and makers of barrels were not obliged to either comply with the Act's requirements or submit their product for inspection. The amended Act, however, does make it necessary to have both fish and barrels in accordance with its provisions, and provides a penalty for infringement thereof. It also empowers inspectors to examine all pickled fish barrels and fish whenever and wherever it is convenient to do so.

The obligatory provisions in the Act entailed a much greater amount of supervisory and inspection work at the coopers' shops, the curing places and the chief receiving and shipping ports. The work was undertaken by a staff of four permanent and six temporary, or seasonal inspectors on the Atlantic coast, while one temporary inspector looked after the work in British Columbia during the fall and winter herring fishery there. The inspectors examined, approximately, 60,000 barrels of herring, mackerel, alewives and salmon. The number examined in the preceding year under voluntary inspection was 8,082 barrels.

The past season being the first in which the new Act was enforced, and as considerable stocks of empty barrels were carried over from the preceding year, it was found extremely difficult to rigidly compel compliance with all its provisions. A good deal of leniency was, therefore, exercised in using the power granted for prosecuting and penalizing offenders.

In every case, however, where a defect was discovered either in the barrel or fish, the inspector placed an official mark on the package to denote wherein they fell short of the requirements. He, at the same time, informed the barrel maker or packer personally, or by letter, of the shortcoming, and warned against its recurrence. This had the effect of bringing about good results with the least interruption of trade or irritation of traders.

Under this fostering system of inspection there has taken place all over the coast, a very remarkable improvement in the barrels now used for marketing pickled fish. The old leaky barrel of varied size and capacity, slimly held together with wooden hoops alone is being rapidly displaced by a strongly made, tight barrel of a standard size securely bound by iron hoops on the end.

As proof of the value and importance of the educative work that has been done in the barrel-making branch of the industry by our inspectors, and the excellent results already achieved, a number of letters of appreciation have been sent to the Department from time to time. Lack of space prevents the publication of all of these. One from a large firm of barrel makers in Nova Scotia, whose barrels, from the point of view of tightness and strength were previously not very greatly in favour, may be printed as a sample.

"We are getting quite a good demand for our barrels, and we are pleased to say that our customers all seem well pleased with them.

"We have to thank you for a large share of our success in giving them the kind of barrels that are satisfactory. Your advice has been worth a lot to us. We can assure you we appreciate all you have done in trying to help us to produce a better make of barrel."

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Improvement in the handling and curing of the fish is also very noticeable, although not yet to the same extent as in barrelmaking. An extract from a letter of a large dealer in, and exporter of, fish, will sufficiently indicate what has taken place in the curing and packing as a result of the work of our inspecting officers.

"The majority of the fishermen are honest, but you can hardly blame Tom Brown, when he sees his neighbour, John Smith, packing 160 pounds to a barrel and getting the same price as he (Brown) gets for 200 pounds, if he also begins packing light weight. It is not a secret in the trade that this practice had become practically universal previous to last year. We are, as you know, enthusiastic supporters of the Act, and while there may yet be room for improvement, we found conditions so much better in handling salted herring the past season that we would sooner give up this line of business than revert to the old haphazard system."

One other extract from a letter of a Nova Scotia dealer to one of our inspectors may be noted.

"We also take this opportunity to tell you that your efforts are showing splendid results. The packages are clean and well coopered, and most of the fish bright, well salted and pickled. The general appearance of products is to-day much better than ever before."

Those concerned with the shipment of dry salted herring from British Columbia to China have, from time to time, complained of the lack of uniformity in the cure of the fish, the size of the packages and the weight of fish contained in them. With a view to overcoming these conditions and setting the business on a more reliable basis, the department has been requested by the packers of and traders in this product to bring it under the provisions of the Inspection Act and establish standards for the cured fish and packages.

With the approval of the packers, a code of regulations dealing with this particular branch of trade is now being prepared, and it is expected that dry salting operations will be carried on next season under the supervision of this department's officers.

CANNERY INSPECTION

The provisions of the Meat and Canned Foods Act, in so far as they apply to the canning of fish and shellfish, are enforced by the department's outside staff of fishery officers. Under those provisions, canneries, the raw material to be used for canning, the whole process of canning and the canned product, including the labelling and designating of such, are subject to inspection.

During the canning season of 1921 there were in operation on the Atlantic coast 536 lobster canneries, three sardine canneries and twenty canneries in which clams and scallops and fish such as mackerel, cod, haddock and herring were canned. On the Pacific coast there were in operation fifty-seven salmon canneries, two herring and pilchard canneries and one clam cannery. At Lake Athabaska in Alberta a fish cannery was completed and operated towards the end of the season. The total number of formal inspections made and reported on during the season was 2,342. There were many more inspection visits to canneries which were not formally reported.

In view of the number of complaints as to the quality and colour of canned lobster meat turned out by some of the canneries on the Atlantic coast, the administrative officers of the department arranged with the Biological Board to carry on a campaign of education amongst the canners concerning the causes of deterioration.

By direction of Dr. Knight, chairman of the Biological Board, demonstrators went from one cannery to another during the 1921 season showing by means of a miniature laboratory the growth of bacteria under unsanitary conditions and how discoloured and inferior quality of meat result therefrom.

The demonstrations were confined to Prince Edward Island. As a result thereof a pronounced improvement in the quality of the fall pack on the island was noticeable. This educational work is being extended to canners in Nova Scotia and New Brunswick during the 1922 packing season.

The Meat and Canned Foods Act provides that all canned fish imported for sale in Canada must comply with certain requirements as to labelling, weight, quality, etc. Packers or shippers of such in other countries are further required to furnish a declaration that their product has been manufactured from sound raw material and under proper sanitary conditions. The imported goods are, besides, subject to such inspection in Canada as may be deemed necessary in order to ascertain whether they conform to the requirements of the Act.

Many importations were held up in the course of the year because of improper labelling, while some were destroyed as unfit for consumption.

FISHERIES STATISTICS

The usual work of collecting, compiling and publishing monthly, quarterly and annual statistics of the fisheries was carried on by the Statistical Branch of the department. In addition thereto a start was made in the past year to collect special statistical information concerning the quantities and kinds of fish taken on the various fishing banks for the use of the International Committee appointed to direct scientific investigations of the deep sea fisheries on the western side of the Atlantic.

A number of deep-sea vessel captains have been supplied with forms for this purpose. The information sought on the forms covers the number of days spent in actual fishing on each trip, the exact location of the ground fished on each day, the catching power used and the quantity and kind of fish taken per day.

It is hoped that with the full co-operation of the vessel captains much valuable data relative to the fluctuations in the abundance of fish on the various fishing banks will by this means be secured in the near future.

BAIT REPORTING SERVICE

By means of the bait reporting service which has been in operation on the Atlantic coast since 1913, Masters of fishing vessels as well as others directly interested, were provided with information regarding bait supplies at various points along the coast, throughout the spring, summer and fall. Information regarding the landing of bait at various points along the coasts of the Maritime Provinces and Magdalen Islands was gathered by the officers of the department and transmitted daily by telegraph to certain ports, where the information was posted in conspicuous places. The information was also published free by the Halifax daily papers.

During the spring months telegrams reporting ice conditions and bait supplies were forwarded from Souris, P.E.I., Magdalen Islands and North Sydney, C.B., to Canso, Halifax and Lunenburg.

Throughout July and August information regarding bait supplies at points along the coasts of Halifax and Guysborough counties was transmitted by telegraph to North Sydney, Canso, Halifax, Lunenburg, Shelburne, Lockport and Yarmouth, while similar reports were also forwarded from Lockport to Halifax and Canso.

During the fall, from the first of September until the middle of November, telegrams were forwarded from Campobello, N.B., to Digby, Yarmouth, Barrington Passage and Lower East Pubnico, N.S., giving information concerning bait supplies in Charlotte and St. John counties, N.B. The above information was also transmitted by telephone from Barrington Passage to Clark's Harbour, Woods Harbour, and Port LaTour, N.S.

SCOUTING FOR MACKEREL

As in the preceding year the Fisheries Protection cruisers which annually follow the movements of the United States mackerel purse-seining fleet were instructed to observe the location and movement of the schools of mackerel as they approached the Nova Scotia coast and to send wireless reports daily to shore giving the results of their observations. The wireless messages were repeated by telegram to points along the coast for the purpose of keeping fishermen advised concerning the movement and volume of fish. This information is also utilized by those engaged in studying the natural history of the mackerel.

Cruising began off the western end of Nova Scotia early in May. On the 7th of that month a school of mackerel was seen off the county of Yarmouth. On May 11 and 12 two bodies of mackerel were discovered thirty to thirty-seven miles south of Cape Sable. These were moving in on the coast, one upon the east and the other on the west side of Brown's bank. Part of the school on the west side of the bank seems to have moved to the north and in conjunction with the school seen off the Lurcher shoal spread out along the western shore of Nova Scotia from cape Sable to Port Maitland, where, diminishing in size, it remained until the middle of June, the fish having then presumably spawned and disappeared.

The main body of the schools on the east and west of Brown's bank came together and moved eastward between Roseway and the La Have banks. Part of the school proceeded towards the shore on the north of Roseway bank and on the 17th of May the fish were being taken about fifteen miles off McNutt's island, in Shelburne county; on the 21st twelve miles off the western end of Queen's county and on the 24th off La Have by United States seiners. On the 26th the main body reached Sambro bank, off Halifax harbour, where it remained for four or five days and where twenty-eight United States seiners operated successfully.

The fish then moved further to the east followed by the American seining fleet and on the 31st May were fifteen miles off Sheet harbour, on June 1 off Liscombe and on June 3 and 4 off Whitehead and Canso, about six miles.

The greater part of the main body then continued east along the coast of Cape Breton and passed Scatarie about six miles off. It proceeded north and east close to the shore until cape North was reached when it turned into the gulf, part of it striking the Magdalen islands and part turned southward and westward towards Prince Edward Island. On June 21 the main movement seemed to come to a stop four or five miles off shore between East Point, Prince Edward Island, and Malpeque, Prince Edward Island, where such of the fish as still formed the main body, having reached the spawning stage, deposited their spawn. From the time the fish struck the western part of Nova Scotia portions of the main mass were left behind at points along the coast and as fishing continued for some time after the mass of fish had passed, they presumably spawned where they remained when the time came for that operation.

FISHING BOUNTY

Under the authority of "An Act to encourage the development of the Sea Fisheries and the building of Fishing Vessels," the sum of \$160,000 is appropriated annually by the department and paid to fishermen of the eastern Maritime Provinces. The bounty is distributed under regulations made from time to time by the Governor in Council.

For the year 1921, payment was made on the following basis:—

To owners of vessels entitled to receive bounty, \$1 per registered ton; payment to the owner of any one vessel not to exceed \$80.

To vessel fishermen entitled to receive bounty, \$7 each.

To owners of boats measuring not less than 13 feet keel, \$1 per boat.

To boat fishermen entitled to receive bounty, \$5.30 each.

There were 11,674 bounty claims received and 11,654 paid. In the preceding year, 9,671 were received and 9,664 paid.

The total amount paid was \$159,449.80, allocated as follows:—

To 586 vessels and their crews, \$46,147.30.

To 11,068 boats and their crews, \$113,302.50.

EXPENDITURE, 1921

County	Boats	Men	Amount	Vessels	Tons	Average Tons	Men	Amount	Paid	Rej.
			\$ ets.					\$ ets.		
Annapolis	144	239	1,410 70	1	60	60	19	193 00	145	
Antigonish	133	196	1,176 20						133	
C. Breton	301	532	3,119 80	16	217	14	56	609 00	317	3
Cumberland	3	6	34 80	1	11	11	3	32 00	4	
Digby	385	656	3,870 80	4	117	29	18	243 00	389	1
Guysboro	729	1,208	7,133 50	54	828	15	249	2,573 40	783	
Halifax	1,203	1,695	10,195 10	61	904	15	265	2,765 00	1,264	1
Inverness	341	723	4,191 30	22	321	15	101	1,039 20	363	
Kings	43	64	382 20						43	
Lunenburg	680	865	5,270 90	141	8,046	57	1,994	22,038 90	821	1
Pictou	45	67	400 10						45	
Queens	191	327	1,924 10	13	238	18	65	693 00	204	
Richmond	425	674	4,090 60	26	449	17	120	1,289 00	451	4
Shelburne	518	1,031	5,983 30	28	804	29	198	2,196 00	546	
Victoria	321	512	3,037 00	10	158	16	43	459 00	331	
Yarmouth	82	190	1,089 00	25	1,317	53	391	4,060 00	107	
	5,544	8,985	53,219 70	402	13,470	33	3,522	38,179 50	5,946	10
Charlotte	361	643	3,556 20	6	91	15	23	252 00	367	
Gloucester	194	446	2,566 20	152	2,252	15	655	6,859 80	346	
Kent	82	174	1,004 20	7	71	10	16	184 00	89	
Northumberland	1	3	16 90	1	21	21	4	49 00	2	
Restigouche	3	8	45 40	1	11	11	3	32 00	4	
St. John	7	13	75 90						7	
	648	1,247	7,264 80	167	2,446	15	701	7,375 80	815	
Kings	410	572	3,457 60	2	31	16	3	52 00	412	
Prince	349	703	4,113 50	7	99	14	23	260 00	376	
Queens	116	257	1,478 10	2	24	12	4	52 00	118	
	875	1,532	9,949 00	11	154	14	39	364 00	886	
Bonaventure	393	687	4,119 70	1	11	11	3	32 00	393	8
Gaspe	2,623	5,129	30,259 10	5	69	12	17	185 00	2,628	
Rimouski	138	215	1,294 70						138	1
Saguenay	847	1,333	8,095 50						847	1
	4,001	7,364	43,769 00	6	71	12	29	217 00	4,007	16
Totals	11,068	19,128	113,302 50	586	16,141	28	4,273	46,147 30	11,654	20

FISH CULTURE

Fish cultural operations during the calendar year 1921 embraced the freshwater and anadromous species only, and were confined almost entirely to the more important commercial food fishes, such as Atlantic salmon in the east; whitefish, salmon trout and pickerel in the interior, and the Pacific salmons in the west.

A large part of the whitefish and pickerel eggs, and practically all the salmon trout eggs were obtained from the commercial catch, and the department is, therefore, largely dependent upon the co-operation rendered by and the success of the fishermen, for such eggs. The success or failure of the work is affected in many ways, but the weather conditions during spawning period is the principal factor. If it were not for the hatcheries, these eggs would be a total loss so far as the maintenance and replenishment of the fisheries is concerned.

The commercial species in the interior were distributed in a free-swimming stage, after the food sac was absorbed, on the natural spawning areas, and largely where the eggs were collected. The sporting varieties—speckled trout in the east, and rain-

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bow and cutthroat trout in the west—were handled in limited numbers. After adequate return was made to the waters in which the eggs were collected, the most of the balance was distributed in response to applications in public water. Small allotments were also made to privately controlled or leased areas on the payment of nominal prices and transportation expenses.

COLLECTION OF EGGS

Climatic conditions were extremely bad during the egg-collecting season in some districts, and were reflected in the number of eggs of some species that were obtained. Atlantic salmon rivers generally were in a satisfactory condition, and there were more salmon on the spawning beds than there have been for years in all the rivers where parent salmon are taken. Weather conditions on these salmon rivers were generally favourable and the full supply of eggs was readily obtained.

A change was made this season in the method of purchasing salmon for the St. John pond. Previously the salmon were bought from the commercial fishermen at their nets and transferred to the retaining pond by departmental officers. The number of salmon obtained in recent years has been small and the cost of the eggs was relatively high, as the overhead expenses under this method are the same for a few fish as they are for the full number that this pond will accommodate. This season the fishermen were paid for the salmon delivered by them in a satisfactory and acceptable condition at the pond. They, therefore, reaped any benefit there might be from careful handling, and this condition, coupled with the return of the fishing to normal, resulted in the pond receiving three times as many salmon as it did in 1920.

The salmon trap and retaining pond in the estuary of the York river, Gaspe basin, was suspended and the upper portions of the York river were inspected early in the season for the purpose of locating a suitable site for a trap-net and a retaining pond. No place was found where it was considered desirable to make the necessary outlay, and further tests were made during the summer with a trap or pound-net in the outer harbour. These tests were so encouraging that arrangements are being made with local fishermen to rearrange their nets and make them suitable for taking salmon for hatchery purposes next season. Towards the end of September two hundred and seven parent salmon for the current season were caught in seines operated by the hatchery staff in the Upper York above the best angling pools, and one hundred and fifty-six were caught in the Barachois river.

Twenty-three thousand landlocked salmon or ouananiche eggs were collected in the Metabetchouan river, Lake St. John district, Quebec. The location is rather isolated and the facilities for transferring green eggs therefrom are not favourable. It is, therefore, not advisable to continue operations in this direction until a hatchery for eyeing the eggs on the ground, and a suitable pond for retaining the parent fish through the summer, are provided. An initial effort was made by the acting superintendent of the Bedford hatchery to raise the importance and grade of that establishment by an independent collection of speckled trout eggs in that part of Nova Scotia. Water levels were away below normal and consequently the collection was not large although sufficient to justify further work along the same lines next year.

Whitefish were not as plentiful in two of the more important areas, and severe weather necessitated the liberation of quite a number of fish before they were stripped and the closing of operations at two points, consequently the total collection of whitefish eggs fell a little below the record collection of last year. All previous collections were exceeded in the Bay of Quinte and Georgian Bay districts. The grounds around Pelee island, lake Erie, were better organized and last year's collection in that particular area was doubled. There was a slight falling off in lake Erie, as a whole, in the Lake of the Woods, lake Winnipeg and lake Winnipegosis.

The weather during the salmon trout season was more favourable than usual and last year's collection was doubled. The collections were larger in all areas than they were last year. The largest increases were made in the districts covered by the Southampton and Port Arthur hatcheries. In the Great Lakes a low water temperature retarded the development of the fish in the retainers and the collection of pickerel eggs was small, but an increased collection in the Lake of the Woods district and lake Winnipeg brought the total above that of the previous year. In recent years a goodly number of pickerel have been caught in the commercial nets in the Point Edward district, lake Huron, early in the spring, but with the approach of the spawning season the catch fell off and consequently comparatively few eggs were available. An effort was made to hold these early fish in large pound-net retainers anchored alongside the commercial nets. This did not prove successful as the water was of such low temperature that the fish hardened instead of ripening.

In British Columbia climatic and water conditions as a whole were the worst in so far as the collection of eggs was concerned that have been experienced by the oldest hatchery officers. The unusual freshets washed out the hatchery pens and fences in several streams and did an enormous amount of damage to the spawning beds. In spite of these unfavorable conditions the total collection of sockeye in each of the four important hatchery areas was larger than it was in the corresponding year of the cycle. The run of sockeye to the Lower Fraser, particularly the Harrison and Cultus Lake districts was small, while an unusually heavy run—nearly five times as large as that of the preceding cycle year of 1917—occurred in the Birkenhead river. Quite a large number of sockeye, spring and coho salmon were seen on the spawning grounds of Shuswap lake and Thompson river, and more sockeye reached Stuart lake and its tributaries than in any year since 1913. The run of sockeye to the early spawning streams at the head of Owikano lake, Rivers inlet, was small, while the late streams generally were well stocked and some of them carried more salmon than they did since 1913. The best previous collection of eggs was exceeded by several millions. All the creeks and the more important spawning grounds of the Babine Lake district, with the exception of the lower Babine river, carried a good run of sockeye and were well seeded, while the run to the Lakelse lake was up to the average of the off years that occur in each cycle of four in this region. Sockeye were even more numerous in the Anderson Lake district than they were during the large run of last year, and the spawning grounds were heavily seeded. These spawning grounds were not damaged by the freshets to the same extent as were those in the lower portions of the Fraser and Skeena rivers, but there will undoubtedly be some loss of eggs and fry through receding water levels. The run to the Kennedy lake district was small and of short duration. It was somewhat similar to, although better than, the run of the preceding cycle year of 1917. This improvement was reflected in the seeding of the spawning grounds and the number of eggs collected. The run of spring and coho to the Cowichan lake district was heavy and in the opinion of some of the oldest residents was the largest they have ever seen. The unusual freshets in all the coast regions of British Columbia increased the cost and interfered to a large extent with the collection of eggs. They also did an enormous amount of damage to the spawning beds although the high water no doubt allowed a larger number of fish to escape from the commercial nets than would have been the case had normal conditions prevailed. These freshets did not extend to the Shuswap and Stuart lakes so that the spawning grounds of these regions were not damaged in that way.

The Highwood river and its tributaries were thoroughly inspected with a view to locating points where cutthroat eggs might be obtained for a small hatchery in that district. The ground was thoroughly covered, but trout were extremely scarce and nowhere found in sufficient numbers to warrant any expenditure in the way of a hatchery.

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The total collection of eggs of the different species made during 1921 was as follows:—

Atlantic salmon..	31,917,500
Ouananiche..	23,000
Cutthroat trout..	613,860
Steelhead salmon..	94,900
Kamloops trout..	460,000
Sockeye salmon..	79,930,550
Spring salmon..	2,444,300
Albino spring salmon..	9,000
Coho salmon..	1,314,750
Pink salmon..	4,911,000
Speckled trout..	560,000
Whitefish..	744,399,500
Salmon trout..	40,186,500
Pickerel..	215,728,000
	1,122,592,860

In addition to the eggs collected, six hundred thousand rainbow trout eggs and nine hundred and eighty thousand speckled trout eggs were purchased from commercial firms; five hundred and seven thousand rainbow trout eggs, two hundred thousand cutthroat trout eggs, eight hundred thousand speckled trout eggs and eighty-five thousand brown trout eggs were received from Federal and State Departments of the United States in exchange for Atlantic salmon eggs.

Under an arrangement made with the Department of Game and Fisheries, concurred in by this department, the officers of the Federal hatchery at Cape Vincent, N.Y., collected whitefish and lake herring eggs in Canadian waters on the Ontario side of the boundary line. This department is indebted to the United States Bureau of Fisheries for a present of 28,215,000 whitefish from the surplus collection at the Cape Vincent hatchery. These eggs were placed in the Kingsville hatchery. It is also indebted to the Department of Game and Fisheries, Toronto, for 18,750,000 pickerel eggs that it collected in Hay bay, Bay of Quinte. These eggs were placed in the Thurlow hatchery and a portion of the resulting fry were placed at the disposal of the provincial department for stocking waters that are not as readily accessible from its own hatcheries. A surplus collection of 1,568,000 salmon trout eggs, included in the above statement, from this department's hatchery at Wiarton was turned over to the provincial hatchery at Sault Ste. Marie, Ont.

REARING OF FINGERLINGS

Greater attention was given to the rearing and feeding of fry, and the distribution of advanced fry and fingerlings was increased by one hundred and forty-two per cent., or from nine and a half to twenty-three millions. The existing ponds and tanks were extended at several hatcheries, and natural ponds in the shape of creek beds in which the water is readily controlled were utilized in all instances where suitable conditions of this nature were found within reasonable distance of the hatcheries.

The question of food is one of the greatest problems in the feeding of fry, particularly at the isolated hatcheries. Many kinds of food have been tried, prepared in different ways and fed in different rotations. Raw beef liver would appear to produce the best growth, but it is somewhat expensive and cannot be shipped in a frozen state to the remote hatcheries. Fishotein, a prepared food, is a good standby as it will keep almost indefinitely, but the fry soon tire of it and appear to sicken if fed on it for any length of time. The "ball" method of feeding canned salmon, which apparently originated with Superintendent Gibbs, of the Babine hatchery, has been followed with satisfactory results at several hatcheries in British Columbia. The salmon is properly ground and then made into small balls with a stone in the centre to keep them from floating. The balls are placed in an egg-basket, the

sides of which have been cut down and lowered to within three or four inches of the bottom of the pond. There is very little waste and any residue is readily removed without fouling the ponds. The paddle wheel automatic feeder was very effective with canned and fresh fish, particularly at outlying ponds, as by filling them night and morning a steady supply of food is provided.

The success previously referred to that is to be met with from distributing fry in lakes that are barren of fish life and in which natural fish food is abundant was amply demonstrated during the past year. The necessary protection from other fish is provided and the cost of feeding is eliminated. The greater part of the sockeye fry distributed in Grace lake at the headwaters of Morris creek, near the Harrison lake hatchery, in April, 1920, left the lake during the following July and August when they had attained a length of three inches. Similarly sockeye fry placed in Hicks lake in June, 1920, migrated therefrom in May of the following year. The first to migrate were eight inches long and they gradually decreased to five inches as the migration progressed.

There are undoubtedly numerous lakes in the mountainous regions which meet the requirements up to a certain point, but they are not always conveniently accessible to the several hatcheries or the outlets are not always such as can be negotiated safely by the young fish when passing out on their way to salt water. In some cases an impassable fall will prevent the safe descent of fry and unless some reasonably inexpensive means can be devised for the safe passage, such lakes can be of no use for the purpose required. At certain points it is convenient to transfer young fry from the hatcheries, but at others it is necessary, on account of the distances and other difficulties of transportation, to use eyed eggs by either planting them in the gravel in the inlets or in temporary hatching troughs. This inexpensive and efficient system is being developed at all points accessible from the hatchery where the desired conditions are found to the fullest possible extent.

EQUIPMENT

A highly efficient box by means of which eyed eggs can be planted in suitable localities under water, in such manner as to insure all of them being at a suitable depth below the level of the stream bottom, was perfected by the District Inspector of Hatcheries for British Columbia. With this box the eggs can be planted in quite rapid water, which is so often found on the spawning beds of the salmon. This box facilitates the stocking of suitable areas to which it is not feasible to convey fry from the hatcheries; it facilitates the stocking of sparsely seeded areas with eggs from heavily or over-seeded streams, and it permits such plantings being made with eyed eggs that are 100 per cent fertilized after the freshet season, which guards against the destruction of the ova by the scouring out of the stream beds, receding waters; ducks, gulls and other natural enemies. Certain tributaries of the Upper Fraser and other isolated waters have been stocked in this way.

A graduated whitefish hatching jar has also been perfected, and it will take the place of the present jars as replacements are necessary. The graduations are of the greatest convenience in calculating the egg contents of the hatcheries at any time. This improvement was first suggested by the District Inspector of Hatcheries for the eastern division. The superintendent of the Pemberton hatchery experimented rather fully in handling green sockeye eggs in different ways, and is of the opinion that the loss is smallest when the eggs are transferred and laid down in the troughs while they are still in a soft state and before they are water-hardened. His conclusions are in line with those arrived at by the superintendent of Harrison lake, in the tests made by him some years ago at Cultus lake. This method is apparently limited in its application as it has been found successful only with eggs that can be placed in the hatchery troughs shortly after they are taken.

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An experiment was carried out with a view to finding out the result of the vibration of a seaplane on eyed eggs when they are being transported from one point to another. Two thousand each of both the sockeye and pink varieties were taken from the Harrison Lake hatchery and carried for forty-five minutes in the air at an altitude of five thousand feet. They were later carefully placed by themselves in the hatchery troughs and their condition closely observed. The several subsequent reports from the superintendent of the hatchery show that absolutely no injury resulted.

This experiment is interesting in view of the possible use of seaplanes for the purpose of stocking otherwise inaccessible portions of the Fraser River watershed or other localities. The one objection to this method, however, is the probable high cost in connection with the operation of the air service which may possibly make it prohibitive in so far as fish cultural operations are concerned.

ACCLIMATIZATION

In response to a largely signed petition from the anglers and residents of the St. John district, supported by the civic bodies and others, the department agreed to make a systematic attempt to establish the European or Brown trout in Loch Lomond, near St. John. The petitioners were fully advised with regard to the possibility of the Brown exterminating the native speckled trout, but they were strongly in favour of obtaining the larger fish, particularly as it is a surface feeder and furnishes better sport during the summer months. Loch Lomond is well adapted for such an experiment as it is a comparatively small and self-contained system and not connected with any large watershed. Brown trout eggs are not easily obtained, and the initial shipment of eighty-five thousand were procured through the courtesy of the United States Bureau of Fisheries in exchange for Atlantic salmon eggs.

MARKING OF FISH

The marking of fingerling and adult fish was continued on a larger scale than in any previous year, the object being to obtain some definite information as regards the frequency in spawning; the constancy in regard to the dates at which the same salmon ascends the rivers from the sea; the percentage of well mended kelt that return; the percentage of artificially fed fry that return as salmon; if rapid growth has any effect on the return of salmon fry, and the extent to which sockeye enter the Fraser river after the regular fishing season. Adult salmon were marked by a numbered silver tag attached to their dorsal fin, and the fingerlings in most instances by the removal of the adipose fin.

The recapture of 152 Atlantic salmon that were marked and liberated after they were stripped at the different retaining ponds has been reported to the department. Forty-eight were recaptured before they had left the river and 104 after their return from the sea, as clean fish. The salmon for most of the retaining ponds are purchased from the commercial fishermen. These fish are all caught in the first instance and also recaptured by anglers and commercial fishermen during the spring and early summer. In the Miramichi and Margaree rivers the salmon for hatchery purposes are caught in nets operated for that purpose only. These nets begin fishing on or about September 15 and August 25 respectively. The recapture of sixty-two clean salmon that were marked and liberated in these two rivers have been reported. They were all in the first instance caught after August 25. Forty-seven, or over seventy-five per cent, were recaptured in the spring and early summer, all before August 16, and only fifteen, or less than twenty-five per cent, after that date. These returns, although limited, are definite in character and indicate that heredity is not the predominating influence as regards the time that salmon ascend the rivers from the sea, and that a salmon that ascends late in the season any year is liable to be an early fish on its return from the sea.

RELATIONS WITH OTHER GOVERNMENTS

Closer co-operation now prevails than ever before between the department and the provincial officials in fish cultural matters. The most cordial relations exist between the department, the United States Bureau of Fisheries and the provinces in contiguous waters where the different services co-operate for the mutual benefit of all concerned. The assistance and co-operation of the lessees of angling rights is also acknowledged; particularly the Restigouche Riparian Association, which for several years has placed its launch, free of any charge, at the disposal of the department for towing parent salmon for the New Mills salmon pond, N.B., and the lessees of the York and Barachois rivers, Gaspe, Que., in whose waters the salmon eggs for the Gaspe hatchery were collected.

No new establishments were built during the year but numerous expansions, repairs and replacements were made at the different hatcheries, and they are all fully equipped and in a reasonably good state of repair.

On the night of October 28-29, owing to unusually violent freshets, both of the water mains which supply the city of New Westminster were broken and considerable portions carried completely away. As the new Westminster hatchery is dependent upon the city supply, operations had to be discontinued until the water system is permanently repaired, which it is anticipated will not be until about May, 1922.

In recent seasons, the collection of eggs for the Gerrard hatchery has been disappointing owing undoubtedly to the series of dense log and brush jams which have formed in the Lardeau river. These obstructions are huge, and the expense which would be involved in their removal would amount to many thousands of dollars. It was felt that the results which could reasonably be expected from the maintenance of a fully equipped hatchery would not be commensurate with the heavy expense involved in removing the afore-mentioned obstructions, and it was, therefore, decided to use the hatchery buildings as an eyeing station only, and, after planting a fair proportion of the collection in the streams from which the eggs were taken, to distribute the balance in other desirable lakes and streams.

A summer school for hatchery officers in the Maritime Provinces and Quebec was held at Truro, N.S., from August 2 to 19, 1921. The course of study was arranged by the Biological Board, and the school was conducted under the personal direction of the board's chairman, Dr. A. P. Knight, until recently of Queen's University. The subjects taken up were the physical and chemical properties of air and water, and the structure and functions of some typical animals and plants in relation to hatchery problems.

The staff, without exception, was most conscientious, faithful and unsparing of personal effort in the discharge of their duties. The well merited appointment of Mr. C. W. Harrison, as District Inspector of Hatcheries for British Columbia, will enable the question of needed expansion in the province to be taken up in a more vigorous manner than has hitherto been possible.

Most regrettable and unfortunate losses occurred in the death by drowning during the freshets of Mr. T. H. H. Guegan at the Lakelse Lake hatchery, and Mr. H. Ross at the Pemberton hatchery, B.C.

Thirty-four main hatcheries, twelve subsidiary hatcheries, six salmon retaining ponds and a large number of egg-collecting camps were operated. The total distribution of all species was ninety-five and a half millions larger than it was last year and several lakes in the Western Provinces that are not readily accessible from a hatchery were stocked by the transfer to them of fish from other waters.

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The total distribution of eggs and fish by species and by provinces during 1921 was, as follows:—

Nova Scotia—			
Atlantic salmon...	6,427,500		
Rainbow trout...	89,500		
Speckled trout...	416,400		
		6,933,400	
New Brunswick—			
Atlantic salmon...	9,232,715		
Spring salmon...	286,825		
Speckled trout...	189,444		
Brown trout...	23,057		
		9,732,041	
Prince Edward Island—			
Atlantic salmon...	871,946		
Speckled trout...	292,422		
		1,164,368	
Quebec—			
Atlantic salmon ...	4,177,809		
Ouananiche ...	12,705		
Speckled trout...	26,679		
		4,217,193	
Ontario—			
Spring salmon...	125,350		
Whitefish ...	268,103,500		
Salmon trout...	17,945,702		
Herring...	5,620,000		
Pickerel...	124,097,000		
		415,891,552	
Manitoba—			
Whitefish ...	233,842,300		
Pickerel...	41,528,000		
		275,370,300	
Saskatchewan—			
Whitefish...	20,575,000		
		20,575,000	
Alberta—			
Atlantic salmon...	133,600		
Ouananiche...	1,218		
Rainbow trout...	649,752		
Cutthroat trout...	379,550		
Salmon trout...	136,756		
		1,300,876	
British Columbia—			
Atlantic salmon...	277,641		
Cutthroat trout...	61,216		
Steelhead salmon...	81,877		
Kamloops trout...	417,769		
Sockeye salmon...	84,789,624		
Albino spring salmon...	76		
Spring salmon...	3,513,387		
Coho salmon...	3,476,811		
Pink salmon...	250,000		
Chum salmon...	5,380,000		
Speckled trout...	48,520		
Whitefish...	12,375,000		
		110,671,921	
Total distribution...			845,856,651

FISHWAYS

In accordance with the policy adopted last year, monthly reports of the conditions of all fishways within their districts have been received this year from fishery overseers. This has enabled the department to keep in closer touch with this class of work and to take steps where such are required to have defects remedied from time to time.

In addition to the reports above stated, the departmental engineer made an inspection of a number of dams requiring new fishways or repairs to the existing ones, and secured data for the preparation of plans from which they could be constructed.

In several instances where the owners of dams had complied with the regulations regarding fishways, the department undertook the construction of new ones.

The following is a list of dams inspected by the engineer in the Maritime Provinces last year:—

Tusket River—Yarmouth County, N.S.—

- (a) Yarmouth Light and Power Company, Limited, power dam.
- (b) Yarmouth Light and Power Company, Limited, storage dam.

Herring Brook—Yarmouth County, N.S.

- (a) Babine and Porthier's dam.

Clyde River—Shelburne County, N.S.

- (a) Clyde Pulp Co. storage dam at Queens.
- (b) Clyde Pulp Co. pulp-mill dam.
- (c) Sutherland Lumber Co. saw-mill dam.

Black Brook—Shelburne County, N.S.—

- Canadian National Railway dam.

Mersey River—Queens County, N.S.

- (a) Minard's dam at Milton.
- (b) Harlow and Kempton's dam
- (c) Pulp-mill lower dam.
- (d) Pulp-mill upper dam.

Medway River—Queen's County, N.S.—

- (a) Pulp-mill dam at Charleston.
- (b) Salter's Falls.

Petite Riviere—Lunenburg County, N.S.—

- (a) G. B. Crouse dam.
- (b) Alfred Kaulback dam.
- (c) Henry Kaulback dam, Conquerall Mills.

Lahave River—Lunenburg County, N.S.—

- (a) Davison Lumber Co. lower dam.
- (b) Davison Lumber Co. upper dam.
- (c) W. E. Parnell, pulp-mill dam.
- (d) Ed. Zwicker and Sons, mill dam.

Mush-a-mush River—Lunenburg County, N.S.—

- (a) Nova Scotia Power Commission power dam.
- (b) Edwards Ernst dam.
- (c) Robar's dam.
- (d) Nova Scotia Power Commission storage dam at foot of Little Mush-a-mush Lake.
- (e) Nova Scotia Power Commission storage dam at foot of Big Mush-a-mush Lake.

Sackville River—Halifax County, N.S.—

- (a) Sackville Electric Light Co. dam at Bedford.

Nine Mile River—Halifax County, N.S.—

- (a) Blanchard and McCurdy dam.

Musquodoboit River—Halifax County, N.S.—

- (a) Abandoned dam at Musquodoboit Harbour.

Sheet Harbour River—Halifax County, N.S.—

- (a) Sheet Harbour Lumber Co. dam (west branch).

Rights River—Antigonish County, N.S.—

- (a) Vintens dam at Sylvan Valley.

Lequille River—Annapolis County, N.S.—

- (a) Town of Annapolis. Power dam.
- (b) Town of Annapolis. Storage dam.

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Annapolis River—Annapolis County, N.S.—

(a) Town of Lawrencetown power dam.

Gaspereaux River—King's County, N.S.—

(a) Wright and Joudry power dam.

Kouchibouguac River—Kent County, N.B.—

(a) Camerons Mill dam.

Kouchibouguac River—Kent County, N.B.—

(a) Town of Richibucto power dam.

Nashwaak River—York County, N.B.—

(a) Nashwaak Pulp & Paper Co., dam.

Pokiok River—York County, N.B.—

(a) Dam at the foot of lake George.

In some instances inspections of dams were for the purpose of obtaining data for the preparation of designs for fishways, while in others it was desirable to ascertain if fishways previously constructed were effective.

The department undertook the construction of the following works during the year the owners in the case of fishways having complied with the regulations:—

Tusket River—Fishway in the Yarmouth Light and Power Company Hydro-Electric power dam.

Mersey River—Fishway in Minard's dam at Milton. Repairs to fishway in Harlow and Kempton dam. Alterations to fishway in pulp mill lower dam. Completion of fishway in pulp mill upper dam.

Medway River—Cleaning out channel and construction of wing dams through Salters falls to assist in the ascent of salmon during low water.

Lequille River—Construction of additional partitions in the Annapolis Hydro-Electric power dam fishway.

Nashwaak River—Slight alterations to the foot of the fishway in the Nashwaak Pulp and Paper Company dam.

The following fishways were constructed during the year by the owners of dams from plans furnished by the department:—

Clyde River—Fishway in Clyde Pulp Company dam at Queens.

Mush-a-mush River—Fishway in storage dam at foot of Little Mush-a-mush lake.

Fishway in storage dam at foot of Big Mush-a-mush lake.

Gaspereaux River—Alterations to fishway at Wright and Joudry dam to meet conditions created by extension to power plant.

Apple River—Construction of fishway in C. H. White & Son dam.

Lequille River—Construction of fishway in dam owned by H. Harnish.

Lahare River—Construction of fishway in second dam at Bridgewater.

Pokiok River—Construction of fishway in dam at foot of lake George.

Kouchibouguac River—Alterations to fishway in dam owned by the town of Richibucto.

A large number of dams throughout the Maritime provinces form problems in the construction of fishways which are difficult to overcome, owing to the fact that many of them are on small streams, where, during the greater part of the season, the volume of flow is quite small. Operation of the power plant in such dams usually drains the water down to such an extent that the fishway becomes dry. On the whole, however, progress is being made. In the case of the Mersey river, which has been obstructed for a number of years, reliable reports indicate that the construction of fishways resulted in numbers of salmon ascending.

Conditions on the Medway river are also reported to be much improved this year, as a result of the work done, and an agreement with the Pulp Company regarding the periodical operation of the mill during low water.

The fishway in the dam on the Gaspereaux river has proved quite satisfactory, both salmon and alewives having been seen to ascend it in numbers.

In British Columbia the work in this connection is confined principally to the removal of obstructions to the ascent of salmon. The principal works undertaken were as follows:—

Granite and Scullabuchan Creeks.—Both of these streams flow into Lakelse lake, which in the past has been a favourable spawning area for salmon of the sockeye species. The removal of accumulated debris resulted in the flow of water passing along the old channels and has restored considerable spawning area.

Atnarko River.—The work done during the year comprised a completion of removal of obstructions on the Bella Coola and Atnarko rivers. Natural conditions are now restored and large spawning areas opened up again to ascending salmon.

Mink Trap Bay.—The operations at this point necessitated the use of heavy machinery as the accumulated debris completely blocked the entrance of the stream. The obstruction was satisfactorily removed and reports show that as a result, spawning sockeye salmon reached the lake above.

Markwell River.—The Markwell river, although not a salmon stream, has been diverted from its main channel and was wearing away the bank which separated it from the very valuable spawning area of Genesi creek, and had it been successful would have completely ruined the sockeye grounds. By the removal of a log jam and the excavation of a channel some 300 feet long, the stream was permitted to flow down the old channel and the necessary protection to Genesi creek assured.

Fishermans River.—This river was cleaned of log jams for a distance of 3½ miles from its mouth and it is anticipated that ascending fish will have no difficulty in reaching the spawning grounds.

Salmon River.—At Salmon river the work consisted of the removal of a large portion of a log jam about one mile from Shuswap lake and cutting of a channel 30 feet wide through the remainder of the jam. The Shuswap lake area at one time teemed with sockeye salmon and at the present time efforts are being made by the way of fish culture to restore this run, and by clearing out obstructions in the streams to permit the return of parent fish for natural spawning.

Skutz Falls, Cowichan River.—In the case of the Cowichan river at Skutz falls, it was necessary to widen the channel and construct a series of concrete steps to assist the passage of salmon. The work accomplished this year has resulted in the fish being able to ascend without difficulty.

In addition to the above numerous other points received attention to a more limited extent.

In the three Prairie Provinces the work in connection with fishways consisted principally of inspections by the officers to see that the structures were kept in good condition and open to the ascent of fish.

Considerable difficulty was experienced at the Canadian Pacific Railway irrigation canal at East Calgary, where the closing of the head gates resulted in immense numbers of fish being stranded.

The establishment of screens to prevent the entry of fish into the canal was looked into and found to be practically impossible.

By an arrangement with the company in which it agreed that the head gates should be closed very gradually, the greater number of fish in the canal ascended to the main river before the water became too low and by allowing a very small run to continue throughout the winter those which remained were found to have passed the winter without loss.

BIOLOGICAL STATIONS OF CANADA.

The work of the two Biological Stations was much extended during the year 1921-22, and embraced more than a dozen distinct schemes of investigation. These may be summarized as follows:—

1. Laboratory researches carried on by a staff of twenty-five university professors, assistants and advanced researchers. For a year's investigations the specially equipped tables, scientific instruments and other facilities of the two stations were fully utilized.

2. Investigations carried on in various ways, more or less distant from the stations, included the continued oyster culture experiments and studies on the Prince Edward Island oyster beds, Shad Investigations in Cobiquid bay, and the adjacent rivers and streams and other lines of work, also Smelt and Flounder spawning Investigations in various localities, etc.

3. Inshore and offshore (deep-sea) researches carried on by the staff on board the Biological vessel *Prince* on the Atlantic coast and by the Biological vessel *Ordonez* on the Pacific coast.

4. A scheme of studies at curing stations and canneries with special reference to dried and canned fish and the "blackening" of lobsters and the "reddening" of salted cod.

5. Further lobster studies, especially the experimental study of larval lobsters at St. Andrews and at Summerside, P.E.I.

6. Tidal pool studies and inshore work on the conditions of fish life in Passamaquoddy bay and on the Vancouver island shore.

7. Further water researches in the Great Lakes, particularly the study of the lake herring in the waters of lake Erie.

8. Courses of instruction on the best conditions for lobster canning and addresses on the causes of spoilt canned lobsters. This work was carried on under Dr. Knight's superintendence, mainly on Prince Edward Island, and included addresses by Dr. Knight and Dr. Prince to the inspectors and fishermen at their conference in Charlottetown.

9. Collections of fishery and other marine material during the winter and summer months, weekly and monthly and special plankton and hydrographic work all the year around by the cruises of the *Prince*.

10. Similar field investigations were carried on from the British Columbia Station, and water samples, temperature observations and other work was done in the waters north and south of the station including dredging trips up to Lasqueti island and as far south as Thetis island, and work at the mouth of the Fraser river.

11. Bottom and surface studies of the biology and conditions of Kennebecasis waters, St. John river, N.B.

12. The preparation and publication of a series of reports of fisheries, etc., under the editorship of Professor J. P. McMurrich, these being a continuation of the "Contributions to Canadian Biology" (new series).

13. The station also, through its staff, gave assistance in the scheme of international fisheries investigations and will during the coming seasons take an important part in this work.

INTERNATIONAL WORK

In addition to the lines of opportunity pertaining to the operations of the stations proper, the board has in various ways aided in the completion of an international scheme of investigations, and prepared a plan of work in which the services of the board's vessel *Prince* would be utilized. The study of the mackerel migrations on the Atlantic coast are specially included in this work. Dr. Huntsman and Professor McMurrich have been named as members of the Joint International Committee and their services have been enlisted in co-operation with eminent United States scientists appointed by the federal authorities, Washington, D.C.

BUILDING EXTENSIONS

Both stations have been much inconvenienced by shortage of laboratory accommodation and boarding facilities for workers owing to the increasing number of qualified workers who have made application for permission to conduct fishery and marine investigations under the board. The necessity of extending the Pacific Station has been forced upon the board for several years, and plans had been completed for the erection of new additions to the station near Nanaimo, B.C., but in view of the limited appropriation it was not possible to proceed with the work. The larger vote generously granted by Parliament will now make feasible these extensions of the premises at Departure Bay, which include a new chemical room, balance room and museum accommodation, the latter being in the lower portion of the proposed extension, while an electric lighting system replaces the existing dangerous mode of illumination hitherto adopted. At St. Andrews the laboratory accommodation has been largely increased by the addition of a large terminal wing added on the west end of the old building and by a new library apartment and a well equipped bacteriological and biochemical laboratory. The much needed extension of the residence was also planned by the board, but could not be carried out owing to lack of funds. Rearrangement of the rooming and dining accommodation carried out by Dr. Huntsman has, however, provided for a largely increased staff of scientists. The increasing number of trained workers resorting each season to the stations may render it necessary to carry out completely the extensions planned. A very important addition to the equipment at St. Andrews is the new up-to-date refrigeration operations for experiments with frozen fish and other important products. Additions to the scientific appliances have been made from time to time and the two Biological vessels *Prince* and *Ordonez* have been repaired and have been employed in carrying out towing and other biological and physical work already referred to.

PROBLEMS INVESTIGATED

The two stations which at one time confined their work mainly to the summer months have now been able to arrange for continuous work all the year around, though the main researches of the staff are carried on from early in June to the end of September.

Among the workers and their problems during the past year have been:—

Dr. A. P. Knight, Chairman of the Board: "Lobster Rearing and Bacteriology of the Canning Industry."

Dr. E. E. Prince: "Studies of Temperature and Light in rearing Larval Lobsters, as well as other fishery studies."

Professor L. W. Bailey: "Canadian Diatoms of the Atlantic and of Northern Waters."

Professor E. M. Harvey, Princeville, N.S.: "Bioluminescence in Marine Animals."

Principal Harrison McDonald: "Bacteriology of Canned and Dried Fish, also 'red' cured cod."

Miss M. E. Kennedy, Macdonald: "Studies on reddened salt cod."

Professor C. J. Connelly, St. Francis Xavier: "Young stages of crab, shrimp, etc."

Dr. A. G. Huntsman: "Factors influencing Reproduction and Growth of Marine Forms."

Dr. S. J. Jackson, McGill: "Histology of Frozen Fish Tissues."

Professor A. B. Klugh, Queens: "Culture of Copepod, Ostracod and other Aquatic forms."

Mr. A. H. Liem, Toronto: "H-Ion concentration in relation to copepod life, also shad fishery researches."

Miss Pallon, Manitoba: "Chemistry of Fish Muscle Stroma."

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Miss D. E. Newton, Macdonald: "Spore forming Bacteria."

Miss M. E. Reid, Toronto: "Spawning of Sea Perch."

Miss E. M. Taylor, Toronto: "H-Ion concentration as affecting Marine Animals."

Miss A. E. Dempsey, Toronto: "Chemistry of Fish Muscle Juice."

Miss F. Fraser, Toronto: "Effect of Light on Growth of Inter-tidal animals."

Among those conducting researches in localities more or less distant from the station:—

Professor P. Cox, Fredericton: "Biology of S. W. Nova Scotian Waters."

Miss M. S. Sparks, Toronto: "Fish Studies off Nova Scotia Coast."

Professor A. D. Robertson; Western, London; Miss Battle and Miss McIntosh: "Further Oyster Investigations, Prince Edward Island."

Mr. A. H. Leim: "Shad Studies at the head of the Bay of Fundy."

The Pacific Station has a similar full record of work carried on including:—

Professor McLean Fraser, Vancouver: "Food of British Columbia Fish, study of Hydroids, etc."

Professor C. H. O'Donoghue, Manitoba: "Taxonomy and other Studies."

Professor A. T. Cameron, Winnipeg: "Causes of variation in sea water, composition, iodine in Annelid, etc., also joining with Professor O'Donoghue, "Light Reactions on free swimming Animals influenced by drugs."

Miss Mounce, Winnipeg: "Variation in distribution of diatoms due to water conditions, also distribution of algae in selected areas, etc."

Mr. H. A. Dunlop, Vancouver: "Distribution of free-swimming copepods."

Mr. R. E. Foerstor, Vancouver: "Systematic Study of Medusae."

It may be added that the laboratories at each station have received important additions during the year and that the addition of a collector of material (Captain Rigby) has been of great assistance, and under the direction of Dr. Huntsman at St. Andrews, who has been responsible in carrying out the elaborate problem undertaken for the past season at St. Andrews, and under the superintendence of Dr. McLean Fraser, who directed the varied activities at the Pacific Station, most successful fishery and other researches have been completed. Professor Fraser agreed to the board's proposal to continue as Director of the British Columbia Station after his appointment as Professor of Zoology in the University of British Columbia, and he has arranged as regularly as possible to visit the station and to spend all the available time possible in carrying on the work there. The two stations under their able directors are accomplishing a greater amount of valuable work than has been possible during the previous years of the operations of these valuable Government institutions.

NATURAL HISTORY OBSERVATIONS

During the summer and fall of 1921, Mr. Andrew Halkett, the department's naturalist, carried on observations as to the condition of the lobsters in the counties of Queens and Shelburne, N.S., on the Northumberland strait shore, and at the Magdalen islands. Much useful data concerning the condition, size, and sex of the lobsters taken, and the depth and temperature of the water from which they were taken, has been obtained, tabulated and filed. Observations of the condition of the scallop and scallop beds of Mahone bay, N.S., were continued during the month of June.

Meetings were also held by the naturalist during January, February and March of the present year at places along the shore of Westmoreland, Kent, Northumberland and Gloucester counties, N.B. The meetings took the form of talks to fishermen, followed by discussions on the importance of preserving seed lobsters, the spawning and moulting habits of the lobster, and kindred subjects. In addition thereto, the subject of bacteria and their effect on canned lobster meat was touched on, and a number of lantern slides, showing the various kinds of germs, were utilized in illustrating their growth.

INTERNATIONAL EFFORTS TO REPLENISH THE FRASER RIVER

Owing to the sockeye fishery of the Fraser river and its approaches having become so seriously depleted as to reduce the annual pack to a very small fraction of that of past years, efforts have in recent years been made to find a means of restoring the former condition of this fishery. Owing to the fact that the salmon making for the Fraser river pass through the waters of Puget sound, on the United States side of the line, it is useless to put into force any regulations curtailing fishing operations on the Canadian side, unless similar steps are taken on the American side of the line. Many meetings have been held by the authorities, or by representatives of the two Governments concerned, with a view to arranging for some co-operative action, in order to preserve the valuable sockeye run to the Fraser. Up to the moment, it has not been possible to secure such co-operation. It was hoped that the draft treaty recommended by the Canadian American Commission, of 1918, would have provided a means of dealing satisfactorily with the situation. Unfortunately, the United States Senate threw out the treaty as a result of opposition to it from the State of Washington.

When it became apparent that no help could be expected from the proposed treaty, steps were taken to arrange a meeting between representatives of this department and the newly appointed State of Washington Fisheries Board, with a view to reaching some understanding on the question of restoring the sockeye run to the Fraser river.

A meeting was held in Vancouver on December 12 last, the following being present to represent Canadian interests: W. A. Found, Major J. A. Motherwell, Dr. C. McLean Fraser, F. Harrison, John P. Babcock.

The representatives of the State of Washington present were: E. A. Sims, H. Ramwell, E. P. Blake, E. A. Seaborg, L. H. Darwin.

The following subjects were placed before the meeting for consideration:—

1. Perpetuation of the sockeye salmon common to the Fraser river system, the other waters of the Gulf of Georgia and its tributaries and of the Strait of Juan de Fuca and Puget sound.
2. Protection of the salmon of the coastal waters of Vancouver island and the State of Washington.
3. To increase the pink salmon in the waters mentioned in section 1 and also of Puget sound wherein pinks contribute to the supply in such contiguous waters.
4. That the pink run be built up in the even numbered years.
5. That where salmon runs have been depleted, salmon eggs or fry be imported from such places as they can be procured for re-stocking.
6. Regulation of seasons in British Columbia and Puget sound.
7. The maintenance and operation of such international hatcheries as are necessary for reproduction of salmon.

No agreement was reached on measures to be taken for the restoration of the sockeye salmon run to Puget sound and the Fraser river. Both sides agreed that if the sockeye run is to be restored there must be a complete stoppage of fishing for at least five years. The Canadian authorities agreed to this only on condition that at the end of the five-year period, when fishing is resumed, the use of purse-seines for the capture of sockeye must be prohibited and the use of fish traps and gill-nets properly regulated.

Canadian representatives expressed the opinion that the sacrifice involved in the total cessation of fishing for five years would not be worth enduring if at the end of that time the use of these appliances were permitted as at present.

The Washington State representatives took the ground that it would be unwise for them to make an agreement which would tie the hands of those who might be in authority and dealing with state fishing matters five years hence; that as the situation

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is one calling for immediate action, no consideration as to what might take place six or seven years afterwards should be allowed to interfere with the taking of the necessary measures to restore the sockeye run.

Tentative agreements were reached on several of the other questions which came before the meeting. These include:

1. Protection of immature salmon in the coastal waters of the west coast of Vancouver island and the Washington shore.

2. Investigations to ascertain the desirability of prohibiting fishing inside the three-mile limit off Vancouver island and the coast of Washington.

3. Proposal to establish humpback runs during the even numbered years in Puget sound and Fraser river waters similar to those in the odd numbered years and the bringing of eggs from other points in British Columbia and Alaska to effect this.

4. A general biological survey of the waters of the Fraser river and the adjacent Washington areas to ascertain the possible extent to which salmon may be propagated in that system.

5. To hold another conference later on for the purpose of regulating humpback fishing to permit of a sufficient escapement of this variety of fish to the hatchery streams and natural spawning grounds.

In closing this report I much regret to say that the prosecution of our fisheries during the year under review was accompanied by the usual loss of life. In each month of the main fishing season from one to eight fishermen were drowned on the Atlantic side. Altogether twenty-five lives were lost, twenty on the Atlantic and five on the Pacific.

I am, sir, your obedient servant,

A. JOHNSTON,
Deputy Minister of Marine and Fisheries.

APPENDIX I.

REPORTS OF INSPECTORS OF FISHERIES

REPORT OF CHIEF INSPECTOR, WARD FISHER, ATLANTIC FISHERIES DIVISION, 1921

The past year was, without doubt, the most unusual and trying season experienced in the Canadian Atlantic fisheries for the past forty years.

Production was greatly curtailed, particularly during the first eight months, due largely to the low prices prevailing for catches. In many districts operations were almost wholly suspended, and the fishermen, whenever possible, engaged in other occupations. Dealers ceased buying. The prices for the small catches secured were exceptionally low, ranging from 80 cents per cwt. for fresh haddock to \$1.25 for fresh cod. These prices were unprofitable to the fishermen, and in some instances not sufficient to pay operating expenses.

The general marketing conditions for fish products were unfavourable, and made impossible any large or steady buying on the part of its dealers, whose efforts were chiefly confined to disposing of the supplies left over from the preceding year. The markets very considerably improved the past four months, and the stocks on hand absorbed, with the prospect that the coming year will see a resumption of the activities both from a producing and export point of view.

The untoward conditions above referred to, together with a lack of employment in other industries, caused considerable hardship to the fishermen of many districts.

Fortunately, the past few months there has been a gratifying improvement, and ready markets were found for the catches of all varieties of fish. Indeed, some of the principal dealers in fresh fish had difficulty in securing suitable supplies to fill orders for Quebec and Ontario markets.

The following review may be found of interest and value:—

NOVA SCOTIA

In this province, Halifax and Guysboro county and the island of Cape Breton were hard hit by the lack of market activities and the consequent low prices for the catches, with the result that the landings of the hand-line fishermen were small. To add to the general embarrassment, the usual run of spring and summer herring failed, the catches not being sufficient to furnish a satisfactory supply of bait. Shelburne and Queens were the most favourably situated during the summer season, as the buyers at Liverpool, Lockeport and Shelburne were paying as high as \$4.50 for market cod. Some of the fishermen in these districts had a successful season.

The lobster fishery was the one bright spot, particularly in western Shelburne, Yarmouth and Digby. The regular season of three months from March 1 was the most profitable in the history of the industry. The weather was uniformly good, in some instances the fishermen hauled their traps regularly every day throughout the season. The catches were large, and of good quality. While the prices for "shorts" were only one-third that of the preceding year, the increased catches and fair prices received for live shipments more than equalized the low prices for the small lobsters. The district east of Baccaro, Shelburne county, to Guysboro, and also Cape Breton island, was not as advantageously situated, as the prevailing winds which obtained in Shelburne, Yarmouth and Digby were unsuited for the best results in the eastern district.

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District No. 1, Cape Breton.

The general conditions in this district were the most unsatisfactory in the history of the industry for many years. While fish of all kinds were plentiful, the low prices and poor market conditions prevailing throughout the whole season prevented operations being carried on with any degree of profitable zeal.

The lobster fishery was particularly disappointing, the catch being only 36,215 cwt., which shows a decrease in the catch of 19,675 cwt., as compared with 1920. The chief cause affecting this fishery was the low prices paid to the fishermen, which were less than one-half those prevailing in 1920. This resulted in many of the fishermen operating only a portion of the season and in a half-hearted way, as the cost of operations made reasonable profits impossible. Forty-nine canneries were in operation, or five less than in 1920.

The herring catch shows a decrease of 3,116 cwt. as compared with the preceding year. The decrease is attributed to the scarcity of herring on the Inverness coast. Herring was very plentiful on the Richmond county coast but as the prices were unusually low and the cost of salt and barrels high, the fishermen did not prosecute this industry with much zeal.

The haddock catch shows a decrease of 42,569 cwt. compared with 1920.

The mackerel catch shows a decrease of 10,260 cwt. as compared with the preceding year. In Inverness there was a decrease as the mackerel only struck the coast off Inverness harbour. Isle Madame, Richmond county, shows a decrease of 7,913 cwt., while L'Ardoise shows an increase in the catch of 3,366 cwt. The catches were disposed of at good prices and the expense of curing was less than in 1920. The increase in the catch at L'Ardoise was due to favourable weather conditions which brought the fish more inshore and gave the poorer class of fishermen who were not equipped with motor boats, a good opportunity to operate.

The smelt fishery shows a marked increase in the catch, the quantity being 2,194 cwt., as compared with 571 cwt. for 1920. The prevailing price, however, was only \$3 per cwt.

The oyster fishery shows a substantial increase, the catch being 1,195 barrels as compared with 725 barrels the preceding year.

District No. 2, Nova Scotia East.

The industry was carried on with a comparatively fair measure of success. The weather conditions throughout the year being good, the fishermen were able to carry on operations without undue loss of gear.

The lobster catch was 48,428 cwt., which shows a decrease in the catch of 12,625 cwt. It should be noted that the average price for the catch in 1920 was 10 cents per pound, while in 1921 the average price was only about 5 cents per pound. With the exception of 1918 the catch was the smallest for over ten years.

The decrease in the catch was general throughout the district except in Cumberland county, where there was an increase of over 100 per cent in the catch and pack during the regular fall season, from August 16 to October 15. The spring catch in that county shows a considerable decline due to four canneries being closed. Halifax county west shows a slight increase, accounted for by the special fall season.

The explanations of the decrease are scarcity of fish and low prices. Three hundred and eighty-four more lobster fishing licenses were issued than in 1920, and of 63 cannery licenses issued 58 operated, but in Antigonish county, where 10 canneries were operating at the first of the season, only four continued up to June 1, and at the end of the season only two were operating. Scarcity of bait was noted especially in Pictou and Antigonish counties. All along the shore traps were taken ashore before the season closed, and on the whole the spring seasons in this district were not successful.

The regular fall season, Cumberland county, was very successful and both packers and fishermen did very well—3,857 cwt. was the fresh catch compared with 1,771 cwt. in 1920; the pack was 1,815 cases compared with 881 cases. The market for canned lobsters improved towards the end of the year, and some packers obtained as high as \$30 per case.

One noticeable feature in fall packing was the high average quantity of lobster required to produce a case of 48 pounds of the canned product. This is due to the lobster being poorly meated after moulting, and the new shell not being hardened or filled out. In some cases as much as 235 pounds of fish was required to pack a 48-pound case.

The pack by counties was as follows:—

Cumberland...	4,379
Pictou...	7,707
Antigonish...	3,545
Guysboro...	3,895
Halifax...	1,346
	—
	20,872
Tomalley...	554
	—
	21,426
	—

The catch of cod shows a general increase about 20 per cent greater than in 1920, with a decrease in value. The average price for 1920 was \$2.17 per cwt., while for 1921 it was only \$1.51 per cwt. Owing to steam trawlers operating from Halifax landing their catches at Portland, Me., the catch for Halifax shows a decrease in haddock, hake and cusk. The shore fishermen in Halifax, however, had an increased catch.

The haddock catch shows a decrease of 31,030 cwt. The decrease in the catch was in Halifax and Guysboro counties, the catch on Northumberland straits and the Bay of Fundy being about equal to that of 1920.

The herring catches have been decreasing in this district since 1918, the catch for the past year showing a decrease of 4,946 cwt. as compared with the preceding year. The decrease in Cumberland and Pictou counties, in the Northumberland straits district, was about 8,000 cwt. Guysboro shows an increase of 9,793 cwt., while Halifax shows a decrease of 7,446 cwt. Market conditions were not good, as large quantities of smoked herring were in stock from the previous year and had to be disposed of at a loss. Large supplies of Newfoundland herring were also on the market.

The mackerel catch shows an increase of 7,526 cwt., or 28 per cent, as compared with 1920. Guysboro county shows a decrease of over 5,000 cwt., due largely to the dog-fish pest, which prevented fishermen from setting their nets when the fall mackerel were running. Halifax shows an increased catch of 13,000 cwt., due largely to the big schools of small mackerel appearing on the coast during the spring and summer. The catch of large mackerel was fair, and as there was great competition among the buyers the fishermen obtained excellent prices, ranging from 15 cents to 40 cents for each fish. Thirty thousand pounds of mackerel were taken in the Bay of Fundy waters of Cumberland county. This is an unusual occurrence as mackerel seldom reaches the head waters of the bay.

The salmon catch shows a most encouraging increase of 1,475 cwt.

The smelt catch shows an increase of 1,259 cwt. Albacore shows a decrease of 483 cwt. and about 50 per cent decrease in the price. The decrease is accounted for from the fact that the American market, to which the fish are shipped, was heavily supplied by large landings taken on the American coast, consequently fishing operations were not nearly so active as during 1920.

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District No. 3, Nova Scotia West.

The general conditions were fair and the fishermen suffered to a less extent than in other districts.

Lobsters.—The weather conditions during the regular fishing season from March 1 to June 1, were most favourable, particularly for the large producing counties of Shelburne, Yarmouth and Digby, where the fishermen were able to haul their traps with hardly a day's loss throughout the whole season. With the exception of Kings county, where the catch rarely exceeds 250 cwt., every county shows a substantial increase.

The catch for the three months was 113,657 cwt., as compared with 95,948 cwt. for 1920. To this should be added the catch for the special season from November 1 to December 15, amounting to 32,733 cwt., or a total catch of 146,390.

The catch and pack by counties was as follows:—

	Catch	Pack
Lunenburg	5,151 cwt.	455 cases
Queens	8,219 "	465 "
Shelburne	46,283 "	11,520 "
Yarmouth	63,549 "	14,675 "
Digby	21,389 "	3,541 "
Annapolis	1,596 "	.....
Kings	203 "	.....
	<hr/> 146,390 cwt.	<hr/> 30,656 cases

The cod landings were 1,077,581 cwt. as compared with 1,127,622 cwt. the preceding year. This shows a decrease of 50,000 cwt.

The haddock and hake catches also show very considerable decreases in the catches, the total decrease being 127,671 cwt.

The herring catch was reduced by nearly one-half, or from 113,763 cwt. in 1920 to 61,419 cwt. in 1921. From some unknown cause the usually heavy spring run failed to make an appearance.

It is gratifying to report that there were substantial increases in the catches of mackerel, halibut, smelt and salmon. The mackerel catch was 28,726 cwt., or an increase of 13,095 cwt. The halibut catch was 20,624 cwt., or an increase of 7,317 cwt.

NEW BRUNSWICK

In New Brunswick the lobster, smelt, salmon and oyster fisheries were the outstanding features. The smelt catch was 62,000 cwt. This valuable fishery is confined almost entirely to the four northern counties of Restigouche, Gloucester, Northumberland and Kent—Northumberland being the chief centre. This fishery is a most lucrative one to the fishermen, it being not unusual for the better placed netsmen to land \$500 worth in a single week. During the last season two men, operating together, disposed of \$1,600 worth as the result of four weeks fishing.

District No. 1, St. John and Charlotte Counties.

The lobster fishery was successfully prosecuted throughout the season, the catch of 9,012 cwt. being slightly greater than the catch for 1920. The value of the catch, however, shows a decrease as compared with the returns of last year. The catch is disposed of alive in the United States, as no canning is carried on in this district. The reduced value is attributed to the heavy supplies shipped from western Nova Scotia in May, and also to the shipments during the special season of six weeks from November 1.

Sardines.—The catch of 152,300 barrels was the smallest for some twenty years. The value to the fishermen was only \$1 per barrel. The following statistics for the four years, 1918-21, will show the seriousness of the situation:—

	Catch	Value
1918...	295,753 brls.	\$1,478,963
1919...	214,510 "	276,565
1920...	196,562 "	284,533
1921...	152,300 "	160,783

It should, of course, be noted, that the heavy returns for 1918 were due to the abnormal conditions existing, when every possible effort was demanded to increase production, with a consequent rise in prices, the fishermen securing as high a rate as \$70 per hogshead of five barrels. Owing to the disorganization of the canned sardine trade the packers were unable to market the packs of 1918 and 1919, with the result that the following years the pack was light and therefore there was little demand for the catches. At the present rate of \$5 per hogshead, the fishermen have been heavily hit, as many of the weirs cannot be remuneratively operated at that price.

Herring.—The catch was 116,263 cwt., as compared with 236,358 cwt. the previous year. The catch was almost wholly in Charlotte county, where the greater portion is used for the smoked trade. It should be noted that the catch of 1920 was much larger than usual. This resulted in the markets becoming demoralized and smoked herring being disposed of at less than cost of production. The markets, however, are now showing good signs of improvement and there is every prospect that the important smoked herring industry of Grand Manan will be revived.

Salmon.—The catches of the net fishermen were the greatest for many years, being 4,150 cwt. as compared with 1,375 for the previous year. The increase is attributed to the abnormal dry weather conditions, which affected the rivers, keeping the fish in the coastal waters, thus enabling the netsmen to secure large catches.

Alewives.—This fishery declined from a catch of about 13,000 barrels in 1920, to 3,250 barrels the past year. No satisfactory explanation has been given. It will be interesting to note the returns for the coming year, as it is possible that the fish ascended the rivers in the early spring freshets.

District No. 2—From Albert and Northumberland Counties to the Quebec Boundary.

The conditions in this district were, on the whole, quite satisfactory.

The lobster catch was 59,453 cwt. The pack was 22,356 cases. The catch for the preceding year was 55,711 cwt.

The smelt catch was 62,041 cwt., as compared with 39,938 cwt. the preceding year. The average price secured by the fishermen was 8½ cents per pound.

The cod catch was 75,361 cwt. The herring catch was 135,975 cwt.; 21,000 cwt. of mackerel were taken.

The tomcod or "frost fish" catch is noteworthy, the catch being 18,730 cwt. This fish, highly prized by many people as a good pan fish, has not yet been popularized in Canada, although considerable quantities are disposed of in Montreal. The catches are disposed of chiefly in the United States. The fishermen received only about \$1.50 per barrel and therefore little interest was taken in the fishery, the catches of which could be very greatly increased.

It is particularly interesting to note the large increase in the salmon catch. About 15,658 cwt. were taken. The catch the preceding year was 8,152 cwt. Record catches were made in the outside waters by the drift boats. The nets operating for hatchery purposes secured 3,200 fish from sixteen nets in six days. Large quantities of the catch were shipped to England.

District No. 3, Inland waters.

This district is confined to inland fisheries only, the principal waters being the St. John river and tributaries, and comprise salmon, alewives, pickerel, sturgeon, whitetish, shad, bass and eels. The total catches amounted to 3,126 cwt. This shows an increase of 1,506 cwt.

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It is interesting to note that 2,055 cwt. of shad were taken the past year. Owing to depletion this fishery was closed for the three preceding years. The quantity taken the past year was about double that taken in 1917 and it is hoped that the revised regulations, which will probably be effective next season, will result in safeguarding the fishery for many years.

The waters of this district constitute most important and valuable breeding grounds, besides affording abundance of sport fishing for the large number of visitors each year.

PRINCE EDWARD ISLAND

While there was a slight decrease in the total catch, the values greatly decreased as compared with the previous year.

Lobsters.—The catch was 63,816 cwt. The following statistics will reveal the heavy losses, both in catches and prices. It will be noted how large a part the lobster fishing and canning industry play in the industrial and economic life of the district:—

	1920		1921	
	Cases		Cases	
West Prince.	8,933	\$ 311,037	7,382	\$152,040
East Prince.	7,086	234,357	6,016	121,021
Queens.	7,818	280,626	5,969	122,190
Kings.	16,485	555,454	11,788	239,493
	40,322	\$1,381,474	31,155	\$634,744

It is particularly gratifying to note that the value of the campaign of instruction carried on the past several years for improving the quality of the Island pack has exceeded expectations. The quality has greatly improved. Much of the success is due to the lively interest taken by the canners, who actively assisted the efforts of the instructional officers and experts in every possible way.

Oysters.—The catch was 3,792 barrels, valued at \$25,669, as compared with 2,775 barrels the preceding year. The outlook for this fishery is good as the catches of spat were excellent, resulting in bedding East and West rivers, Orwell, Vernon and Seal rivers with an abundance of small oysters.

THE LUNENBURG FLEET

The landings of the Lunenburg fleet were most gratifying, amounting to 269,830 quintals, as compared with 291,475 quintals in 1920, which was the largest catch in the history of the industry. The decrease was due wholly to the smaller number of vessels engaged, only 94 being employed, as compared with 117 in 1920. As a matter of fact, the average catch per vessel was greater than for many years.

The lack of the usual early spring operations accounts for the reduced total catch, as only five vessels engaged in early spring fishing, landing only 3,300 quintals, as compared with sixty-eight vessels in 1920, landing 30,000 quintals.

Under normal conditions the catch for 1921 would have greatly exceeded any catch in the history of the fleet. The drop in the prices since 1919, and the continued high operating expenses, taken together with the considerable supplies on hand from 1920, were the causes in the curtailment of operations.

The first six months of the year dried fish could hardly be disposed of at any price. In some instances the shore fishermen had to sell at \$4. The local and export markets gradually revived, and during the past month sales were made at \$7.

The preparations for 1922 are active, and will put a much larger number of vessels in commission.

THE LOBSTER FISHERY

Special attention has been given to the lobster fishing and canning industry and a very lively and wholesome interest developed. When it is pointed out that the catch the past year was 393,625 ewt. and that the pack was 137,607 cases, the whole having a marketed value of \$5,143,403, it will be seen that the lobster fishery, with the exception of the cod fishery, is the most lucrative and valuable of the Atlantic fisheries, particularly when it is remembered that the rate of the catch was less than half that received in normal years.

The fishery is, however, subject to great danger, as it lends itself more readily to unwise exploitation. The fishing seasons are comparatively brief, the returns immediate and lucrative. For the past several years a firm stand was taken against any extension of the fishing seasons, with the result that the balance between the catch and the natural increase was fairly well maintained.

On representations that the exceptional low employment condition of the past year, together with the low prices prevailing for the catches of the deep-sea fisheries—a special lobster fishing season from November 1 to December 15 was granted to the southwestern district from Cole harbour to Minas basin. This has been of little value to the fishermen, as the fish were not in good condition during a considerable portion of the special season. The shedding of the shell was too recent, with the result that the shell was thin and the meat poorly developed. The lobster was, therefore, weak, and the percentage of losses much greater than during the regular fishing season. A majority of the canners operating did so with reluctance, as the extra season endangered the stability of the markets, which were favourable for the disposal of the regular pack. A number ceased operating after a few weeks, owing to the fish not being in good condition. As a result of the poor condition of the fish, the live lobster trade was most unfavourable. The American markets were already well supplied, and the shipments during the special season hardly paid the expenses. Many of the fishermen who were vigorously opposed to the special season did not operate, while a large number took their traps ashore some weeks before the close of the season.

A further detrimental effect was that the fishermen of Charlotte and St. John counties, New Brunswick, suffered severely by the shipments of poor quality lobsters from Nova Scotia. Last year the opening price for the New Brunswick catch was 39 cents per pound. This fall the price was 13 cents per pound. The special season was, therefore, not only unprofitable for the fishermen but involved a serious economic loss.

While the special season may have been justified, the results here clearly show that its value to the fishermen was not at all commensurate with the economic loss caused by the unsuitability of the season, and the poor condition of the catch.

The lobster fishing and canning industry requires stabilization, and every possible action should be taken to this end. It is impossible to stabilize the industry unless the fixed fishing seasons are adhered to. Every canner, to a man, and many of the more prominent fishermen of the important fishing districts are strongly opposed to additional fishing seasons, or to any extension of the seasons.

Further, there is a noteworthy growth of opinion on the part of the fishermen, particularly of the coast west of Halifax harbour, in favour of prohibiting the slaughter of small lobsters, by the enactment of a size limit regulation. Halifax county is practically unanimous in this regard, and Lunenburg county gives the proposal of the Prospect district fishermen most hearty support.

Digby county fishermen have also taken action in the matter. The Bay of Fundy shore of that county is now operating under a size limit regulation, which was adopted at the request of the fishermen. At Cape St. Mary's where the fishermen operate a Union cannery, the fishermen are unanimous for a size limit, notwithstanding

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ing that the limit of nine inches proposed by them would put their factory out of business. Within the past few weeks the fishermen of Westport and other important lobster fishing centres placed themselves publicly on record as favouring the protection of the small lobster.

St. Mary's bay is one of the best natural breeding grounds on the coast, and with proper protection the lobster fishery of the bay can be very greatly enhanced in catch and value. The fishermen are alive to the advantages to be obtained by conservation, and their deliberate expression of opinion in this respect is an evidence of the high value they place on the fishery as a resource of prime importance.

THE OYSTER FISHERY

The oyster fishery is in an unsatisfactory condition. The total catch was 18,823 barrels. While the catch exceeded that for some years past it is only equal to the catch from the New Brunswick areas in 1900. As quickly as opportunity and circumstances afford a complete survey of the areas should be made, with the object of securing better control of the industry and the development of many hitherto unworked or little known areas existing along the whole coast, as well as working out a more satisfactory arrangement with the provincial authorities in connection with leasing for cultivation, and the defining of boundaries for mussel-mud digging. The farming population in the vicinity of the best areas in New Brunswick and Prince Edward Island highly prize the mud for fertilizing purposes and continually press to have the boundaries extended, with the result that digging operations are constantly encroaching on the live areas.

It is planned that a preliminary survey be made the coming summer for the purpose of ascertaining the possibilities and needs of the fishery. It may be pointed out that while the conditions in connection with the areas at Buctouche and Shédiac, New Brunswick, and Malpeque and Richmond Bay, Prince Edward Island, are well known, little attention has been given to other portions of the coast where oysters of fine quality exist. In Nova Scotia there are productive areas at Ostrea lake, in Halifax; Tracadie, in Antigonish; Merigomish, and Cariboo harbours, in Pictou; Tatamagouche bay, in Colchester, and Wallace bay and Pugwash river in Cumberland. In Cape Breton, catches in fair quantities have been made at Orangedale and River Dennys in Inverness; St. Patrick's channel, Washabuck, McKinnon's harbour and Estmere in Victoria county.

It would appear that reasonable efforts for the preservation and development of this fishery would be fully warranted.

RIVER AND INLAND FISHERIES

The river and inland fisheries have not been overlooked, as they are not only of great value from a sport fishing point of view, but are quite essential in connection with netting operations carried on for the catching of salmon, smelts, alewives and other anadromous fishes. Many thousands of the residents and visitors find their recreation in the river fisheries. With proper exploitation it should not be difficult to very greatly increase the wealth of the river districts as a result of the increase of sport fishing.

The difficulties with regard to adequate protection should be appreciated. It is quite impossible at the present time, under any system of administration, to employ a sufficient force of officers to protect the innumerable rivers, streams and lakes of the Atlantic provinces. The best that can be done is to give reasonable protection to the more important streams. With the sparse population and the remarkable network of inland waters, illegalities are bound to occur. The impossible should be recognized.

The past year was not as favourable for sport fishing as former years. The extraordinary drought lowered the waters in the rivers and lakes, resulting in conditions that prevented successful angling. While considerable quantities of salmon ascended to the spawning grounds during the early freshets, the fish either continued in the coastal waters or remained in the lower pools where they showed little inclination to take the fly. Trout fishing was, however, quite good throughout the season.

The rivers have been kept free from obstruction and the fishways well looked after. Considerable work in this respect will be required this year as a number of the fishways on important streams will require to be either repaired or rebuilt. The operations of the saw and other mills have been closely watched, with the result that the rivers and streams are well protected from pollutions.

PATROL BOATS

The number of patrol boats employed at the beginning of the year was twelve. In view of the need of economy the steamer *Nelson*, operated at an annual expense of about \$9,000, was laid up and finally disposed of. This boat will not be replaced. Patrol boat *F*, Western Nova Scotia district, will not be operated the coming season.

With hardly an exception the boats were operated with greater satisfaction and value than for the past ten years. The machinery and equipment was kept in good order by the motor engineer, and little or no loss of time was incurred in repairs. While there were considerable seizures of illegal fishing gear, the operations of the boats were highly effective in preventing illegalities and assisting the shore officers in adjusting difficulties among the fishermen.

THE INTERNATIONAL SCHOONER RACE

The second International fishing schooner race was held off Halifax on Saturday and Monday, October 22 and 24, and enlisted very great interest, visitors being present in large numbers.

The challenge race was preceded by the usual beautiful and spectacular Canadian elimination race for the selection of the challenger, and was won by the Lunenburg schooner *Bluenose*, in charge of Captain Angus Walters, of Lunenburg.

It will be remembered that the challenge race of 1920 was won by the American schooner *Esperanto*, in the contest with the Canadian, *Delawana*.

The first race, Saturday, October 22, was over a course of 39.3 miles, starting from the Halifax breakwater. The American schooner *Elsie* crossed the starting line at 9.00.10, followed by the *Bluenose* at 9.00.49, and after a most exciting race, during which the *Elsie* kept the lead over a considerable portion of the course, she was beaten out by the *Bluenose* crossing the finish line at 1.33.05, or 12½ minutes in advance of the *Elsie*.

The second race, Monday, October 24, the *Elsie* again being first to cross the starting line—9.00.32—the *Bluenose* following at 9.01.52. For nearly three hours the Gloucester schooner had the *Bluenose* trailing in her wake, but the Lunenburg schooner showed her quality on the homeward stretch and crossed the finish line at 2.21.41, followed ten minutes later by the *Elsie*.

These races have awakened intense interest and will doubtless result in evolving a type of fishing schooner well adapted for both the salt and fresh fish fisheries.

SERVICES OF THE R.C.M.P.

Expression should be given to the valuable services rendered by the Royal Canadian Mounted Police, in assisting in protecting the fisheries of Prince Edward Island and in apprehending violators of the law at a number of points throughout the division. In several instances, where every local effort failed, the police succeeded in rounding up offenders. Inspector LaNauze has been most courteous and prompt in his assistance.

ADMINISTRATION

The past two years have without doubt been the most trying period in the industry for forty years, with the result that satisfactory administration has been difficult, particularly when it is remembered that the organization of the Atlantic Division was coincident with the general demoralization affecting the fishery, and that the organization involved changes necessitating the employment of a staff of officers with little or no experience in the business. It could not therefore be reasonably expected that the new officers could secure in so short a time a satisfactory grasp of the many intricate, highly involved questions constantly arising. Much progress has been made in their training, although the permanent staff is not yet complete, as a number of the first appointees were found unsuitable and had to be released.

A most promising feature of this service is the evident desire of the officers to "make good". The inspectors speak highly of their zeal.

It will be of interest to note that the number of employees, chiefly special guardians, has been reduced by about three hundred, without any loss of efficiency in the service. Indeed, the consensus of opinion along the coast is that there has been a vast improvement in this respect, notwithstanding the fact that the staff of new officers have hardly passed the A B C's of their training.

The course of instruction given at Charlottetown, P.E.I., in September last, was most valuable, and included "Address and demonstrations on the growth of Bacteria", "The migration of fishes", "Demonstration on the curing and packing of pickled fish".

A conference was held with the lobster packers, at which a most informing address was given by Mr. W. F. Tidmarsh, Charlottetown.

In addition, the chief inspector held over thirty conferences with the fishermen, packers and dealers, all of which was of very great advantage from an administrative point of view. The fishermen were particularly appreciative and gave evidence of a much increased interest in the service generally.

Twenty thousand seven hundred and fifty-three licenses were issued during the year, and 290 prosecutions undertaken for infractions of the Fisheries Act. The duty of the officers in enforcing the regulations is not a pleasant one, but is quite essential not only from the fishery protective point of view, but also in the interest of good citizenship generally. One law easily evaded brings other laws into contempt. An unpunished lawbreaker comes to hold himself above the principle of the "Greatest good to the greatest number" and this results in appeals for special privileges, to the detriment of the general public. Happily, many of the fishermen are becoming the best advocates of law observance, with the result that illegalities are not as prevalent as in the past. This is particularly true with respect to the valuable lobster fishery. In several of the more important districts illegal fishing has practically disappeared.

DEVELOPMENT

The general development of the industry must in the nature of things depend quite largely on the export trade. While there is no limit to the possible catch of deep-sea fish, particularly cod and haddock, the fact remains that the catches from these fisheries must be coincident with the expansion of the markets. There is no doubt that a large fleet of trawlers could secure heavy and steady catches, but experience has shown that the present market demands are not equal to the possible catches of the five trawlers now in the service. Indeed, the past year the fresh fish markets could not absorb ordinary catches, with the result that the trawlers have either to be laid up for about six months each year, or put in the salt fish trade, or otherwise employed. It is safe to say that every possible profitable market is being carefully exploited. The development of the deep-sea fisheries must depend on the

ability of the markets to absorb the catches. It is therefore beside the mark to lament the lack of very large development either in the catches or fishing equipment, as the development of our fisheries must go hand in hand with the development of the markets.

It should be pointed out, however that several districts, particularly on the Cape Breton coast, are sadly handicapped by the lack of cold storage, salt supplies and satisfactory transportation facilities. While it has been urged that salt depots and cold storage facilities should be furnished by the department, the wisdom or practicability of such course is very greatly to be doubted, as experience has shown that any proposition of this character that can be based on sound business practice, will be looked after by private enterprise, otherwise the difficulties and embarrassments are obvious.

Opportunities are constantly arising for the utilization of little known products of the sea. For instance, a side line of considerable promise developed in Grand Manan the last year in connection with the smoked herring industry. In this trade, which is a large one, it is necessary to remove the scales from the fish before salting for the smoke-house. The scales were a waste until last summer a New York company, engaged in the manufacture of artificial pearls sent their operators into the district and purchased large quantities of the scales, for which 5 cents per pound was paid. The total amount expended was \$17,000, and it is contemplated to very greatly increase the business the coming year.

Also, inquiries have been made as to the possibility of securing large quantities of dulse, for which a ready market is assured. For some years past considerable supplies have been gathered, chiefly at Grand Manan, N.B., and Digby, Nova Scotia, although a good quality of dulse may be easily secured at many points along the Atlantic coast. About 1,000 cwt. was prepared for the market the past year, the value of the catch at Grand Manan being \$5,880. It is reported that prospects of developing a value of at least \$50,000, is probable. The usual method of taking and preparing dulse for market is to strip it from the rocks at low tide, and sun-dry for several days. This method of preparation is crude, as the production of the best quality depends upon perfect weather conditions. Doubtless with the probable development of the industry, artificial drying methods will be introduced.

It will also be interesting to note that an American firm, known as "The Marine Fish Products", are operating at the old Government Reduction plant, Canso, manufacturing fish meal and fish oil from dog-fish. Fish meal, which contains a high percentage of protein (about 80 per cent) is used mixed with other brands of meal, for cattle feed, and has a ready market, at a fair price. Fishermen were paid \$6 per ton for dog-fish landed at the plant. A sufficient supply, however, could not be obtained the past year to make the operations the success anticipated. The lack of raw material was due to prevailing weather conditions during the run of dog-fish, as well as to the lack of a sufficient number of fishermen engaging in the catching of the dog-fish.

In view of the large investment in the fisheries of the province, and also in view of the large turn-over each year, and particularly in view of the fact that the industry gives direct employment to over 40,000 persons, and employment to a very considerable number in allied industries, it is obvious that it occupies a very important economic position. A study of our shore population will make clear the large part the fisheries play in the life of the province. Important towns and villages all along the coast are wholly dependent on the fisheries for their existence, while large stretches of the coast now thickly settled, would have remained unpopulated. Every endeavour to lighten the burden of the fishermen; to safeguard their interest, and to encourage the industry would be justified.

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REPORT OF INSPECTOR J. E. BERNIER, M.D., ON THE SEA FISHERIES OF QUEBEC FOR 1921

I have the honour to submit my report regarding the fisheries of the Gulf Division for the season just closed.

Such season is specially remarkable for the fact that following the decision rendered by the Privy Council and dated November 30, 1920, the Federal Government was given authority of assuming the administration of the fisheries in the waters accessible from the sea by way of navigation and which had been previously placed under the jurisdiction of the provincial authorities. Such measure affected all the fishermen established along the St. Lawrence from Montreal to the gulf, as well as those inhabiting the peninsula of Gaspé. It was easy to foresee, from the very outset, that its application would be such as to raise a strong opposition, in all quarters, on their part, since they were to be compelled to take out two permits to keep their fishing apparatus in operation.

It became necessary, following short preparations, and with an untrained staff, to give the right direction to the service in such a way as to molest in the least possible way those affected by that change of administration, and show an attitude tending to strongly impress the public with the necessity for all to comply with the directions of the Order in Council dated April 20, 1921.

The fishery overseers were instructed:—

1. To renew, in the name of the same persons, all the fishing licenses granted the preceding year.
2. To require that all the fishermen, without any exception, take out licenses from the Department of Marine and Fisheries, such as provided by the new regulations.
3. To use all reasonable means with a view to inducing them to comply with same;
4. To never have recourse to rigorous measures before having exhausted all possible means of persuasion.
5. To ignore the pretensions of the Provincial Government concerning the jurisdiction of the fisheries and to avoid to get involved in any argumentation with anybody in connection therewith.

Owing to their tact, good behaviour and broadmindness, the fisheries overseers succeeded in imposing a satisfactory control without exciting much discontent, or interfering with the fishermen's undertakings. In five cases only it was necessary to take legal proceedings against those refusing to comply with the regulations.

The *Loos* being ready to put to sea on May 12, I left Quebec to undertake the regular service and assume direction of same as in former years. Taking advantage of the information gathered, I devoted all my attention to the places where the fishermen, under the influence of erroneous directions, intended fishing without any other permits than those they had procured in the past. I advised them promptly to change their decision by indicating to them all the annoyances and inconveniences which might result from such an attitude, and afterwards, until the end of the season nothing particular happened in that connection.

The fishing industry continues to be demoralized by the unfavourable circumstances resulting from the abnormal conditions of the markets. The value of the total production compared with that of 1920 has decreased by about \$1,000,000.

The number of fishermen was less than that in the preceding year by about 8 per cent. The fishing apparatus and implements are not being renewed; the boats rendered useless are not replaced, and no less than 400 remained inactive during the last season. These conditions seem to deserve serious attention.

The following is a summary of what I noted throughout the different sections of my district where the principal species of fish caught are: cod, lobsters, herring, salmon, mackerel and smelts.

COD

The low prices offered for that fish as well as the high cost of all the necessary articles and goods have strongly contributed to discourage a considerable number of fishermen who made all the efforts possible to find elsewhere more remunerative occupations. Those who persisted in their old vocation were compelled to do so because they failed to procure some other employment.

In the Canadian Labrador, cod appeared in large schools during June and July. The seventy schooners from Newfoundland which resorted to that coast at the regular time, obtained much success, many re-sailing with complete cargoes of fish. The Canadian fishermen not impeded by illness from devoting their time to the fishing operations made also important catches. The yield in that section is greater than that of last year. The fishermen were specially favoured by the absence of ice as well as by fine weather.

From the mouth of the Saguenay as far as Natashquan, the fishermen did not carry on any fishing operations, till about the middle of the season. They were then improperly equipped and did not show much activity. The yield was poor. The unsatisfactory results obtained must be attributed to the prices, shamefully low, paid for dried cod, and which amounted to \$2 or \$4 per hundredweight, while the fishermen of the South Coast received from \$7 to \$11 for products of the same grade.

In the county of Gaspé, from Fane point to cap Chat, the cod fishing operations were conducted with much energy. The fishermen of that district have taken to the habit of exporting themselves their products to Europe, through the banks, and of keeping themselves closely connected with the conditions of the markets.

More circumspect, better informed, and less subordinate to the dependence of the fish dealers than those of other portions of the district, they foresaw that good results could be derived from marketing their fish products and this explains why they devoted themselves with such zeal to their fishing enterprises, and the remarkable success which resulted therefrom.

In the other part of the county of Gaspé, at Magdalen islands and in the county of Bonaventure, the yield was inferior to that of last year, which is due to the low prices offered to the fishermen, from the very outset of the season. Such a state of things tended to discourage a certain number of them who applied themselves to some other occupations.

LOBSTERS

The lobster fishery was below the average. At Magdalen islands, the total production only amounted to 12,178 cases, against 16,618 cases in 1920. It would, however, be premature to conclude that such a decrease in the output is a sign of depletion. In consequence of the unfavourable conditions of the market and the high cost of the material necessary for carrying on fishing, the operators of the lobster factories thought it wise during the preceding winter to reduce their preparations in comparison with those undertaken in the past. The decrease of lobster traps in operation and the violence of the winds, during the months of May and June, may be regarded as the principal causes of the failure in this fishery.

Along the coast of Gaspé and Bonaventure, a decrease has also been recorded, while in the Canadian Labrador, the production has varied little.

HERRING

The spring herring appeared in large schools all along the northern part of the St. Lawrence gulf, but, unfortunately, our fishermen were not in a position to take advantage of their presence.

Up to the last years of the war, the sale of herring to foreign fishing vessels, which utilized them for bait in the cod fishery carried on on the banks, was a source

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of considerable revenue for the inhabitants of the Magdalen islands. Since then, as no markets can be discovered for smoked or salted herring, and as there are only a limited number of vessels from the United States, Nova Scotia and other countries visiting the islands, with a view to supplying themselves with bait, the islanders have no interest in carrying on this fishing, but for the purpose of feeding the local market. During the last season their fishing operations were necessarily limited, and as far as it may be foreseen, this state of things will continue for an indefinite period, that is, as long as no proper method of utilizing their catches has been discovered.

In the majority of cases their revenue was insufficient to cover the operating expenses; some fishermen could not even secure a sufficient amount of profit to pay their license fees.

In the Canadian Labrador, fall herring, usually in great demand on our market, was inferior in quality, and its production was rather small.

SALMON

The statistics tend to show that the catch of salmon in the Gulf Division has doubled that of last year, having amounted to 7,805 hundredweights, compared with 4,929 in 1920. The cause of this increase cannot be explained.

If it is true to state that the general results were more encouraging throughout the different parts of the district where such fishing is carried on, it cannot be concluded that all the fishermen were equally favoured. As the water was very low and limpid in the rivers, from the very outset of the season, due to the lack of rain in spring, salmon ascended them without staying any appreciable time in the sea-waters, and consequently those having nets set in the estuaries of rivers and surroundings, were the only ones to effect profitable catches. The others operating stations usually fairly productive, but more distant, obtained so little success that the expenses exceeded the revenue they succeeded in deriving from such fishing births. These remarks apply especially to the county of Saguenay.

A fact worthy of mention which many seek to explain in a satisfactory way, without however succeeding to convince everybody, is that the size of salmon were much less on the average. In the counties of Bonaventure and Gaspé, they assert it has never been observed that the weight of salmon had fallen off to an average of 8 pounds before.

MACKEREL

This fish which had deserted the waters at the entrance of Gaspé Bay, the surroundings of Seven islands and Baie-des-Chaleurs for a number of years, tends to re-appear in more and more considerable quantities. In the county of Bonaventure where the mackerel might produce great benefits, since it is possible to ship the fish by rail, in a fresh state, the inhabitants who had given up the habit of carrying on that fishery, are now devoting to it much more attention and to that end are undertaking to equip themselves with more modern fishing implements.

At Magdalen islands spring fishing was fairly profitable, while that carried on in the fall proved a complete failure, due to the unfavourable weather conditions. Raging winds did not cease blowing during the month of September.

The proceeds of the sale were very satisfactory. The appointment of a residing fish inspector at Magdalen islands contributes to improve the quality of all kinds of fish prepared there for the market. I have personally ascertained that that officer has undertaken a campaign of instruction among the fishermen, and I have been informed that his influence has already produced good results in connection with the salting of mackerel.

SMELTS

The smelt fishery which cannot be carried on with profit but in the county of Bonaventure and in a portion of the county of Gaspé, that is to say, at such localities through which runs a railway line, has yielded 922 hundredweights more than last year.

Such results may be attributed to an increase in the number of fishing licenses granted.

FISHING LICENSES

The following is a comparative statement of the fishing licenses issued during the two last seasons:—

Licenses	1920	1921
Herring (trap-nets)	41	29
Cannery	3	3
Lobsters factory	71	75
Lobsters (fishermen)	627	951
Salmon (gill-nets)	155	347
Salmon (angling) . . . . .	...	16
Trout (gill-nets) . . . . .	...	5
Sturgeon (gill-nets) . . . . .	...	5
Cod (trap-nets)	272	264
Smelts . . . . .	...	193
Weirs . . . . .	...	74
Hoop-nets . . . . .	...	67
Seines . . . . .	...	40
Night-lines (ligne de fond) . . . . .	...	55
Eel weirs . . . . .	...	274
		2,416

The patrol season on board the *Loos* closed without any casualties, and we came back to Quebec on October 28.

Fishermen other than Canadians who appeared in small numbers on the coast of Labrador and Magdalen islands have faithfully complied with the regulations. The fisheries law has, in a general way, been well observed; in addition to the five prosecutions above mentioned, it was necessary to take eighteen further legal proceedings against certain fishermen of Port Daniel and surroundings for having not adapted their salmon nets as prescribed by Section 18, sub-section 6 of the regulations; one for having thrown saw-dust into Sainte Anne des Montes river, and two others for having used dynamite in Saint Jean river (county of Gaspé).

REPORT OF CHIEF INSPECTOR G. S. DAVIDSON, PRAIRIE FISHERIES DIVISION, FOR 1921

I have the honour to submit herewith my annual report on the fisheries of the Central Division.

In the province of Alberta there has been a slight increase in the commercial catch over the year 1920. At the same time there has been a decrease in the number of fishermen operating, this latter was no doubt caused by the adverse condition of the markets in the first six or seven months of the year.

During the course of the summer the Mackenzie Basin Fisheries, Limited, commenced the erection of a cannery and salting and smoking plant on the shore of lake Athabaska, about twelve miles northwest of Black bay. A considerable amount of fishing equipment in the shape of motor boats, dories, scows was taken in to the site of the plant. The machinery for the plant was taken in and installed, actual canning operations commencing on September 14, the plant operated daily from that date until September 30, during which period the output was 645 cases of canned trout, 62 cwt. salted trout, twenty cases canned whitefish and ten cases of smoked

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whitefish, all of which I understand was shipped out to Edmonton. It is too early to make any statement as to the future success of this cannery. A market will have to be created and shipping facilities greatly improved, before, in my opinion, profitable competition with the long-established canneries can be maintained.

In the southern part of the province all reports received go to show that the closing of the trout streams for a period of two years has attained the desired result, and that fish are now more plentiful than in years past. It has been suggested that the streams within the limits of the forest reserves be closed to all fishing, if this action is taken, it will mean the preservation of the spawning and breeding grounds of the trout and the effect will be beneficial in all the southern district of Alberta.

In the province of Saskatchewan there was a slight decrease in the total quantity of fish taken for commercial purposes, also in the number of fishermen engaged in the work. This can be accounted for by the depressed condition of the markets earlier in the year, which resulted in the fishing companies holding off until such time as they could see clearly where the catch could be disposed of. I may say that the administration of the fisheries of this province has been eminently satisfactory during the year. The officers are all experienced and keen on their work, and have certainly given their best efforts to making a success of the supervision of their different districts.

It was found necessary to close Lowes lake to summer fishing for whitefish, this lake being the principal summer fishery in the province it was feared that it was being subjected to too heavy fishing and this course was taken in order to give it a chance to recover. The closing of this lake may have had some slight effect in lessening the total quantity of fish taken, but it was a necessary action and will well repay the present loss when again opened.

In the province of Manitoba, in spite of very precarious market conditions during the first six or seven months of the year, there has been an increase in catch. For the past four or five months the market has steadily improved, so that where a loss was anticipated a certain amount of profit was found instead. Sturgeon fishing was carried on during the winter in the Churchill river for the first time. These operations were not successful to those engaged in them owing to the difficulties encountered in transporting the catch from the fishing grounds to the nearest shipping point, however, there was no loss by waste of fish, I am glad to say.

During the month of June, the Assistant Deputy Minister of Fisheries visited Winnipeg and Winnipegosis, where he met a large number of delegates, appointed by the fishermen of those districts and with them discussed certain changes in the regulations which they desired. Practically all of these changes were granted. At these meetings the fishermen were shown clearly that it was the desire of the department to show them every consideration, and to advance their interests in every way, compatible with the proper preservation of the fisheries. This fact I feel sure the fishermen fully realized.

In general I may say that the reorganization of the fishery service in the Central Division was completed during the year, and it is already noticeable that this reorganized service is doing good work and is working smoothly. The officers are helping the fishermen to the best of their ability; showing them that they wish to co-operate with them in bettering the fishing industry in every way; urging them to place their catch on the market in the best possible condition; and teaching them that observance of the regulations is solely for their own benefit. While there is in certain districts a certain amount of illegal fishing, I think that this condition is improving, wherever it is sharply checked and the examples made are having their effect.

It is noticeable that the general lowering of prices of meat and foodstuffs is not followed by the price of fish. In my opinion the price is much too high to make it a popular article of diet. So long as a very large percentage of the catch of these

provinces finds an unlimited market, with high prices, in the United States, the price will keep its present level. In comparison with most other foodstuffs, fish is and has been the highest priced article of food in the market. With the reduced cost of production, now evident, I hope during the coming year to see fish take its proper place as a food and that its consumption will greatly increase. The efforts of the officers of this division to accomplish this will I am sure have a certain amount of effect.

I desire to record my appreciation of the officers of this division, as a whole, for their co-operation and support in the work of supervising the fisheries of these three provinces. I would also convey my thanks to that efficient body, the Royal Canadian Mounted Police, for the assistance given us, especially in the outlying portions of the country, where it is not possible for our officers to make numerous patrols, there, their assistance has been invaluable, and their whole-hearted co-operation with our officers has been pleasant to see.

In conclusion I may say that the year 1921, taking into consideration the very adverse market conditions obtaining throughout the first half of the year, may be considered a fairly successful one. It is apparent now that the limit of depression in the fishing industry is passed and that the future will be most successful.

REPORT OF CHIEF INSPECTOR, MAJOR J. A. MOTHERWELL, WESTERN FISHERIES DIVISION (BRITISH COLUMBIA), FOR 1921.

The value of the fisheries products of the province of British Columbia exceeds that of any other province in the Dominion of Canada, in the fiscal year 1920-21 being 45 per cent of that of the whole Dominion.

SALMON

First in value comes the salmon, the pack of which during the season just closed amounts to 602,657 cases of all varieties. The preceding season the total pack was 1,187,616 cases, or close to 100 per cent greater than the year 1921. Not since the year 1908 has the salmon pack in this province been so small. This is due principally to the practical failure of the sockeye run together with the fact that owing to the condition of the markets there was no incentive for the canners to pack springs, cohoes, pinks, or chums.

The sockeye pack for the whole province during 1921 was 163,914 cases against 351,405 cases for 1920 and 339,848 for the brood year of 1917, and in the big year of 1905, 1,080,673 cases. It will be plainly seen that the supply of this variety of salmon has become alarmingly depleted. This is particularly the case in the Fraser River district where the pack this year was only 35,900 cases and where, unless some co-operation can be obtained from the interests on Puget sound, the small supply which annually comes to this locality will undoubtedly be entirely wiped out.

In the northern district, the Naas river appears to be going the way of the Fraser and would appear to call for some very drastic action.

The sockeye pack on the Skeena has been the worst in the history of that stream and the experience during the past season at the Bella Coola, Rivers Inlet and Smiths Inlet districts has been also extremely disappointing.

The sockeye variety being by far the most valuable has in the past been fished much more intensively than others and there would appear to be no doubt that this is the chief cause for the present condition. In spite of the fact that the amount of fishing equipment has materially increased the catch has been becoming less.

It has been suggested that during the period of the war when the cry was for food, more food, and still more food, a much larger proportion of the salmon runs

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was taken than would have been the case under normal conditions and the industry is possibly now feeling the result of that intensive fishing in the brood years of the four-year cycles.

It has been intimated by a most eminent authority on the salmon on this coast that this year's small run may be due to a large extent to the conditions found on the feeding grounds between the time the fingerlings left the fresh water and the time they returned from the sea as mature fish. In the Skeena district the sockeye during the past season were of an unusually small average in size and this fact may confirm the above theory.

Another cause mentioned is the fact that four years ago, in 1917, there occurred a series of unusually violent freshets. These extended practically over the whole coast of British Columbia and particularly north of the Fraser river. These occurred, unfortunately, shortly after the sockeye salmon had finished spawning and resulted in the spawning beds being largely destroyed and huge quantities of eggs totally lost.

It is very probable that each of the above three reasons was a contributing factor to this year's conditions and the situation being as it is, extraordinary means are imperative to conserve and if possible restore the runs of the sockeye salmon to the several areas.

The runs in recent years show conclusively that in the past there has not been a sufficient escapement of parent fish of the sockeye variety to the spawning grounds. That being the case and if fishing operations were carried on with no greater intensity than up to several years ago, the necessity for some curtailment would still be apparent, but in the light of the last few years experience when larger quantities of gear were used and in spite of which the catch became smaller, the necessity for some drastic action is much more evident and there is no alternative but to provide immediately for a much larger escapement.

Undoubtedly the first consideration of the administration is the conservation of the supply as it can be readily realized that if the supply of raw product is not maintained it will only be a matter of time when the salmon fishing industry will be a thing of the past. The most efficacious way of assuring an adequate escapement of parent fish is by means of curtailing the fishing in the way of increased weekly closed periods, a shorter fishing season, the lowering of the fishing boundaries, or all three methods, at the same time increasing to the greatest extent possible fish cultural operations and efforts in the way of clearing from the salmon streams all obstructions to the ascent of the parent fish to the spawning beds.

To insure a sufficient escapement of salmon it may become necessary to so curtail fishing operations as to make them unprofitable to both fishermen and canners and other branches of the industry until the runs have been again built up. In this way the salmon supply would be preserved but it is possible that the industry, which is already in a precarious position financially owing to the last few years experience, may be irretrievably injured and the situation is so serious as to require the most careful consideration.

On the other hand if no prompt and adequate action is taken and if the runs are permitted to decrease each season it will be only a very short time before the runs of sockeye are so depleted as to result in the loss of employment to thousands of fishermen who now depend on the sockeye fishing and in addition the numerous canning establishments will be unable to operate for lack of a supply of this particular variety of salmon.

Under the present conditions there is only one course open and that is to preserve the supply and steps are being taken towards this end and will be applicable to operations in 1922.

During the season just ended greater restrictions were placed on the sockeye fishing than in previous years, the season being closed earlier than usual and at one point in particular the weekly closed season considerably extended.

Owing to the fact that the fall grades of salmon have not been in such demand as the sockeye there have not been fished to the same extent and do not show serious depletion apart from several points which will receive particular attention in the future from the standpoint of conservation. The supply of pinks and chums has been well maintained and although the packs of these varieties for the past year have not been large it was due to the anticipation that the market would not be in a condition to absorb any quantity.

The spawning areas of the fall varieties were well seeded this year although in certain localities fishermen were disappointed at not obtaining as large a catch as they expected. This was due to the streams being so high and there being so much fresh water that the fish instead of having to wait at the mouths of the streams for the water to rise, proceeded immediately up to the spawning beds and so escaped the nets. Fishing for pinks and chums is mostly carried on by means of seines although a considerable quantity of pinks is taken in the gill-nets during the sockeye season.

The supply of red salmon being apparently insufficient to fill the market requirements it is very probable that the demand for pinks and chums will be considerably increased and although there is no marked depletion in the supply of the varieties there is no doubt that in order to insure the runs against being overfished the proper steps will be taken next season to the end that the experience in connection with the sockeye supply will not be repeated in the case of the fall varieties.

A good run of spring salmon was experienced during the season 1921, in the northern district, the fish averaging about thirty pounds. The run of this variety to the Fraser River was satisfactory. The same may be said of the West Coast of Vancouver Island. It is regretted that probably eighty per cent of the catch of this variety in that district is exported. Sixty per cent of the fishermen trolling for salmon on the west coast during 1921 were Japanese who account for at least eighty per cent of the catch, practically all of which goes to Puget Sound points in a fresh or mild cured state.

Export of Salmon.—Under the present regulations fresh salmon, with the exception of the sockeye variety, are permitted to be exported free of export duty. The following are the quantities so shipped from the province during the past three seasons and mostly for processing in the United States:—

1919—25,557,000 pounds.
1920—4,346,000 “
1921—9,084,300 “

The majority of the above quantities was purchased by interests from Puget sound and conveyed to the canneries in those waters, canned and placed on the markets of the world under labels announcing that the contents were *British Columbia salmon packed on Puget sound*.

Unfortunately owing to the long distances the fish are carried when exported and the delay in the collecting boats obtaining loads, the salmon, when it reaches the cannery, is not always in a fit condition to be packed. In past years it has been canned, however, and the injury done the British Columbia industry by the processing of this inferior fish, some of which was found to be unfit for human consumption, will be appreciated.

It is anticipated that with the demand for the fall grades of salmon improving the Alaskan and Puget sound cannery interests, whose own supply of raw product has been depleted, will be coming more and more to Canadian waters at the expense of the British Columbia industry.

In this connection it is interesting to note that an export duty of two cents a pound would have resulted in a revenue to Canada amounting to \$779,746.

HALIBUT

Next in value to the salmon comes the halibut fishery. During the twelve months just ended the total landings in British Columbia ports amounted to 32,586,800 pounds. Of this amount 13,055,400 pounds were landed by Canadian bottoms and 19,531,400 pounds by American bottoms.

No licenses are required in the case of halibut fishermen owing to the fact that practically all operations are carried on in extra territorial waters. There is, therefore, no revenue from this source apart from the customs duties although the benefit derived from so many boats calling at Canadian ports where they are permitted to outfit, dispose of their catch and engage crews, will be readily appreciated.

As each season passes, the necessity for a closed period in connection with this fishery becomes more apparent. The numerous reasons have already been very thoroughly gone into by the Canadian American Fisheries Conference of 1918 and in the report submitted it is ably demonstrated that neglect to protect halibut during the winter months would have absolutely no justification and would result in the absolute ruin of this enormously valuable fishery.

It will be extremely regrettable if the American Senate refuses to ratify the proposed Halibut Treaty and it is sincerely hoped that the remarkable unanimity of all concerned, both Canadians and Americans, on the absolute necessity and desire for such protection, will result in the hoped for ratification.

HERRING

The supply of herring on the British Columbia coast shows no depletion. The pack put up by the several different methods, varies from year to year naturally owing to market conditions. During the past season 2,417 barrels of herring were Scotch cured in the Barclay Sound district and for which a demand was found principally in the Eastern States; 4,149 cases were canned and 23,998 tons were dry salted for the Oriental market. Smaller quantities of this variety of fish were smoked and also placed on the local markets in a fresh state.

Apart from Nanaimo and Barclay sound, herring is not caught in large quantities except in the Prince Rupert area where large amounts are used fresh and frozen each year for the purposes of halibut bait. During recent years American boats proceeding north to the halibut grounds have been able to obtain supplies of bait at Barclay sound points and Nanaimo and it is expected that the quantities in the southern part of the province will be considerably increased in the future.

PILCHARDS

During the calendar year 1920 there were 91,197 cases of pilchards packed and during the year 1921 only 16,091 cases. The decrease is due entirely to market conditions as this very desirable variety of food fish is very abundant on the west coast of Vancouver island.

Recently new markets have been developed in New Zealand, Australia and India and it is anticipated that in future years large quantities of pilchards will be packed and shipped to those points.

SUNDRY VARIETIES

In addition to the varieties specially mentioned there is a great number of other edible fish which are taken to a more limited extent. Included in these are the cod, flounder, sole, skate, smelt, octopus, clams, crabs, shrimps, sturgeon, perch, abalone and oysters, the great proportion of which are used fresh and which in the aggregate represent a very considerable value annually.

WHALING

Due to market conditions for the products of these mammals, no whaling operations have been carried on in British Columbia during the season 1921, the stations at Naden Harbour, Rose Harbour and Kyuquot being closed. Prospects look considerably better, however, for next season and it is anticipated that hunting will be resumed in 1922.

FUR SEALS

There were 2,349 fur seals taken off the coast of British Columbia under Article 4 of the Pelagic Sealing Treaty of 1911, which permits Indians to hunt these animals by means of canoes propelled entirely by oars, paddles or sails and without the use of firearms, and preparations are under way to hunt fur seals during next season on a larger scale. These operations require careful supervision by the boats of the Fisheries Protection and Fisheries Patrol Service in order to insure that the provisions of the treaty are not violated.

REDUCTION WORKS PLANTS

During the past season seven plants were operated for the purpose of the manufacture of fish meal, fertilizer, and the rendering of oil from the non-edible fishes, sharks, hair seals, and the offal from the numerous canneries. During the period of the war there was considerable activity in this industry owing to the abnormally high prices of fish oil. During the past few seasons, however, the prices have been so low that the profits have been reduced practically to the vanishing point.

This class of industry is deserving of every encouragement, particularly as grayfish are used in very large quantities, resulting in the destruction of a fish which is so injurious to the runs of the edible varieties. In addition the offal from the canneries and cold storage plants is collected and processed, thereby obviating the necessity for the dumping of this raw product in most undesirable places and eliminating the expense of towing it long distances to deep water.

From the shark skins, excellent leather has been manufactured and it is regretted that the operations of the one plant in the British Columbia waters which used sharks, found it impossible to continue. The supply of the raw product is abundant and no doubt this branch of the industry will be properly developed in the course of a few years.

HAIR SEALS AND SEA LIONS

During the past season the demands for some action by the department with a view to eliminating hair seals and sea lions from the salmon fishing grounds has become more insistent. There is no doubt that vast quantities of very valuable salmon are destroyed, resulting, in certain localities, in the difference between profit and loss to the fishermen. It is hoped that some means may be shortly devised whereby these pests can be exterminated or at least so reduced in numbers as to bring relief to the salmon fishing industry. The seals are difficult to destroy, in any appreciable numbers, but the sea lions are a fairly easy prey when hunted on their rockeries.

LICENSES

The following statement shows the number of licenses issued during the year 1921 in the Province of British Columbia:—

	1921	Increase over 1920	Decrease
Salmon gill-net—			
Whites and Indians..	2,681	151	....
Other nationalities..	2,096	....	132
	<hr/>	<hr/>	<hr/>
	4,777	19	....
Salmon trolling—			
Whites and Indians	957	....	£78
Other nationalities..	505	....	8
	<hr/>	<hr/>	<hr/>
	1,462	....	586
Salmon cannery..	56	....	10
Salmon trap-net..	8	....	11
Salmon purse-seine..	59	....	103
Salmon drag-seine..	34	....	11
Salmon saltery—			
Whites and Indians..	26	23	....
Other nationalities..	9	....	....
	<hr/>	<hr/>	<hr/>
	35	23	....
Herring gill-net—			
Whites and Indians..	36	....	2
Other nationalities..	21	11	....
	<hr/>	<hr/>	<hr/>
	57	9	....
Herring purse-seine..	25	....	10
Cod gill-nets—			
Whites and Indians..	31	....	3
Other nationalities..	80	....	....
	<hr/>	<hr/>	<hr/>
	111	....	3
Other varieties—			
Whites and Indians..	567	43	....
Other nationalities..	386	72	....
	<hr/>	<hr/>	<hr/>
	953	115	....

PATROL SERVICE

The British Columbia coastal waters during the past season were patrolled by two steam and eighteen gasoline boats the property of this branch of the department. In addition thirty gasoline boats were chartered during the fishing season, making a total of fifty. It will be appreciated that with a coast line of approximately 7,000 miles containing hundreds of inlets, bays and streams where fishing is carried on, it is imperative that an efficient patrol service be maintained to the end that the valuable fisheries resources of the province may be preserved. A great majority of the hundreds of streams entering into the sea are frequented by some variety of salmon, and if great care is not taken to cover all territory it would be a very simple matter for the runs of salmon, particularly the fall varieties, to be exterminated. While it is not possible to cover all streams as adequately as could be desired, at the same time, consistent with reasonable economy, the patrol service has proved to date fairly satisfactory. If intensive fishing for fall varieties of salmon develops there is no doubt that the patrol must be considerably increased if the salmon supply is to be saved.

It is interesting to mention the fact that during the past season a certain amount of patrolling was done by means of one of the government sea planes maintained at the Jericho Flying Station in Vancouver. During the season the officers of this department used this method to the extent of forty-eight hours' actual flying time and were able to cover long distances with a saving of much valuable time and with the result that considerably greater efficiency was effected in those parts where this method was adopted. It was hoped that the flying service could be utilized to a very large extent and possibly be substituted for several of the gasoline boats. However, owing to the fact that the air craft cannot be used at night in the fisheries service and also to the fact that weather conditions, fog particularly, often prevent flying, it was not found possible to make as much use of the service as was anticipated. In addition to this the expense in connection therewith, unless it will result in some great saving of time, is hardly commensurate with the benefits obtainable.

As an example of the saving in time it is interesting to refer to a trip which was made from Vancouver to Anderson and Kennedy lakes on the west coast of Vancouver island. Owing to the transportation facilities to these more or less inaccessible points, the journey by ordinary means would have consumed probably seven days. By means of the sea plane the officers were able to leave Vancouver at eight o'clock in the morning, spend three hours at each of the hatcheries situated on the above-mentioned lakes, and return to Vancouver by six o'clock the same evening.

Mention should be made of the increased efficiency and economy to the Patrol Service resulting from the appointment of a highly qualified gasoline engineer who takes charge of all the repair work of these launches at the end of the season and keeps them in running order during the period they are in commission. The expense to the department in the way of his salary is saved many times over each season.

EBERTS' REPORT

It is with considerable gratification that the report of the commissioner, the Hon. Mr. Justice D. M. Eberts, has been received after his investigation into the several charges against the administrative officers of the British Columbia branch of the Fisheries Service. It is exceptionally gratifying to find that all the charges made have been proved to be absolutely without foundation and on the contrary the commissioner in his report specially testifies as to the efficiency of the officials of the Department of Fisheries in British Columbia and particularly to those who were charged with irregularities, dereliction of duty and partiality. Judge Eberts states with the greatest of emphasis that not the slightest evidence was adduced to convince him that any one of these gentlemen was guilty of any of the charges made. On the contrary, he was impressed on all occasions with their sincere desire to carry out the fishery laws in keeping with their instructions, with their grasp of the fishery situation, in their desire to be fair, and their never-failing object to preserve the fishing industry in British Columbia for all time.

INDIANS

Each season, with the increased amount of information received, it becomes more and more apparent that the depredations of the Indians on the spawning beds of the salmon has become so serious as to greatly endanger the supply of this variety of fish. In the Fraser River watershed, Indians or others are not permitted to take salmon above the Mission bridge and as far as it is possible this regulation is enforced. On the Skeena River watershed, however, the Indians are permitted to, for the purpose of their own winter's food, take from the spawning grounds what salmon are required. During the past fall many thousands of spawning sockeye salmon were destroyed which will result in a loss to the fishing industry impossible to estimate.

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In addition to the Babine Lake district Indians, during the season 1921, a large number of families from the Fraser River watershed came across to the Skeena and obtained their food supply and these Indians are making arrangements whereby a greatly increased number of families will repeat this operation next year.

In view of the immense value and importance of the sockeye salmon fishery and the present depleted condition of the runs, it is imperative that this practice be stopped at the earliest possible moment, otherwise all efforts at conservation will be of no avail. It is not reasonable to seriously hamper the fishing industry of the province by way of increased restrictions in fishing operations and permit the Indians to nullify all good results obtained thereby.

MEETINGS WITH INSPECTORS AND OVERSEERS

In the spring of 1921 the inspectors and overseers of the province were called to Vancouver for the first of what is intended to be the annual meeting of such officers with the chief inspector for the purpose of discussing fully the numerous fisheries problems of the several districts and for an exchange of ideas and advice which it is hoped will result in much greater efficiency in the service. There is no doubt that personal contact with the officers of the province results in a far better understanding of one another's problems and makes for a considerably increased esprit de corps and the betterment of the service generally.

CONFERENCE WITH STATE OF WASHINGTON FISHERIES BOARD RE: SALMON FISHERIES OF THE

FRASER RIVER AND PUGET SOUND

As long as twenty years ago it was apparent that the sockeye runs to the Fraser river would require increased conservation methods in order to preserve this enormously valuable natural resource. Owing to the fact, however, that the salmon ascending the Fraser river pass through the waters of Puget sound on the American side of the line, it was not possible to put into force any regulations which would curtail fishing operations on the Canadian side if similar steps were not taken in connection with the fishing on the American side of the line.

Commissions have been appointed and many meetings have been held for the purpose of arranging for some co-operation with the authorities to the south with a view to proper conservation methods being provided. Unfortunately up to date it has been impossible to obtain such co-operation and the result has been that the sockeye fishery of the Fraser has become so seriously depleted that the large packs taken in past years and which should be worth annually in the vicinity of thirty millions of dollars, have been reduced to a very small fraction of that amount.

It was hoped that the draft treaty recommended by the Canadian-American Commission of 1918 would have provided machinery which would permit of the proper handling of the situation. Unfortunately, although the treaty was signed by both the Canadian and American members of the commission and was tentatively approved by the Dominion Government, it was finally withdrawn from the American Senate, due to strenuous opposition from the State of Washington. This final action by the Senate was advised to this department during the present fall.

As soon as it became apparent that no help could be looked for in the way of the proposed treaty, steps were immediately taken to meet the newly appointed State of Washington Fisheries Board, in the hope that it would have sufficiently wide powers to co-operate with the Dominion Government and make possible an agreement whereby the salmon runs to the Fraser river could be restored and adequate conservation methods enforced.

A meeting was held in Vancouver on December 12 last. No agreement was reached as to the means of restoring the sockeye runs to the Fraser river, but an understanding was arrived at with respect to several other questions which came up at the conference.

OBSTRUCTIONS IN STREAMS, 1921

As a more intimate knowledge of the conditions obtaining on the spawning beds and in streams leading to spawning areas for salmon becomes available, the necessity for considerable attention being given each year to the clearing out of obstructions to the ascent of spawning fish becomes more apparent.

It will be appreciated that in the work of clearing obstructions in streams there are many difficulties with which the engineers have to contend. In the first place, experienced men are required and it is often difficult to obtain these for the short periods during which it is possible to operate.

Owing to many of these obstructions being in very remote parts of the province, the lack of facilities for transporting men and supplies causes much loss of time and makes the work very hazardous. In many instances supplies have to be packed in on the backs of the men, as it is impossible to use horses or boats.

Another difficulty to be confronted is the fact that in most cases there are only certain months in the year when the weather and water conditions permit of obstructions being removed satisfactorily, and as these periods are very similar in most parts of the coast, the attention of the engineering staff is required at many localities at much the same time, rendering the very desirable personal attention very difficult and at times impossible.

The clearing of obstructions, survey of hatchery sites, building of fishways, wharves, preparing of plans and other related work has necessitated during the past season the employment of additional help in the engineer's office, and it is anticipated that as this most important work increases it will be necessary to provide permanent assistance in the way of an assistant who can attend to the drafting and office routine, both engineers being kept very busy attending personally to the outside work.

REVENUE

In comparing the total revenue of the province for the calendar year 1921 with that of 1920 it will be observed that the past season shows a reduction of approximately \$82,000. The following comparative statement covering the principal items on which revenue is collected is very eloquent:—

	1920	1921
Salmon gill-net...	\$ 47,650 00	\$ 47,790 00
Salmon drag-seine...	8,850 00	4,650 00
Salmon purse-seine...	46,800 00	18,600 00
Salmon cannery...	32,500 00	21,500 00
Salmon trap-net...	9,500 00	4,000 00
Salmon saltery...	600 00	1,700 00
Salmon trolling...	9,260 00	7,315 00
Tax on seine and trap-net caught salmon...	31,474 74	17,988 16
Tax on canned salmon...	39,415 50	24,097 78
Herring purse-seine...	2,775 00	1,875 00
Crab...	445 00	485 00
Fines...	2,203 50	1,708 50
Sales...	3,296 47	1,186 03
Sundry licenses...	1,307 50	1,384 50
Totals...	\$236,077 71	\$154,279 97

It will be observed that practically all the reduction is due to the operations in connection with salmon fishing. Owing to the unfortunate condition of the salmon market as affecting pinks, chums, coho, and spring salmon and also to the fact that a great percentage of the first two varieties particularly are taken by means of seines, it was not anticipated that the revenue would be so great as that of last year. In fact at the first of the season it was anticipated that practically no pinks or chums would be canned apart from those which were taken by gill-nets while fishing for the sockeye variety. As the fishing season advanced, however, it

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was found that the market conditions were improving considerably. In addition most companies had on hand a stock of cans or tin plate which had been purchased at top prices and which they were desirous of salvaging as far as possible as prices of this supply were falling. This being the case, during the latter part of the season the fall varieties were fished to a greater extent than at first expected.

CO-OPERATION BY PROVINCIAL FISHERIES DEPARTMENT

It is with much pleasure that reference is made to the apparent desire of the Provincial Fisheries Department to co-operate with this one as far as possible for the benefit of the fishing industry of the province. Evidence of this spirit has been abundant during the past year and I particularly wish to testify to the assistance rendered by Mr. J. P. Babcock, the assistant to the commissioner at Victoria and who has at all times shown a willingness to assist by means of his personal, extensive, and valuable knowledge and experience of British Columbia conditions.

STAFF

In conclusion, I wish to express personal appreciation of the loyalty and efficiency of the staff of the British Columbia Fisheries Service. This is particularly gratifying during the first year of the writer's experience as chief administrative officer for the province.

INSPECTION OF SPAWNING AREAS

During the season 1921 the inspection of spawning areas was given particular attention and it is proposed to have this work performed with the greatest possible thoroughness each season.

The several fishery officers of the province are being specially coached with a view to obtaining the most reliable information possible and the results of the first season have been most satisfactory. The report in full which follows was prepared from data furnished by the inspectors, overseers, guardians and superintendents of hatcheries together with a certain amount obtained by the chief inspector of the province personally, who together with Mr. J. P. Babcock, the assistant to the Commissioner of Fisheries for the province of British Columbia, and Dr. C. H. Gilbert, of the University of Stanford, visited particular portions of the Fraser river watershed.

APPENDIX II.

FINANCIAL STATEMENT, FISHERIES, 1921-22

Vote No.	Services	Appropriation	Expenditure
237	Salaries and disbursements of fishery officers, Fisheries Patrol Service, Oyster Culture.....	\$ 754,000 00	\$ 708,438 72
238	Building fishways, etc.....	40,000 00	22,681 00
239	Legal and incidental expenses.....	4,000 00	1,581 82
240	Conservation and development of deep sea fisheries.	25,000 000	18,128 79
241	Fisheries intelligence Bureau.....	5,000 00	1,819 84
242	Inspection of canned and pickled fish.....	15,000 00	14,999 69
243	Fish culture.....	365,000 00	362,636 93
244	Scientific investigations into fisheries.....	15,000 00	11,399 11
245	International Commission—Fraser River.....	10,000 00	
246	Marine Biological Board.....	42,000 00	42,000 00
		1,275,000 00	1,183,685 90
	Civil Government salaries.....	92,060 00	83,152 69
	Contingencies.....	25,000 00	23,923 91
	Fishing bounty.....	160,000 00	159,449 50
		1,552,060 00	1,450,212 30
367	Cost of living bonus.....		78,676 48
529	Reclassification arrears.....		4,774 66
	Superannuation Act, 1920, No. 4.....		4,756 66
	Gratuities <i>re</i> deceased officials.....		230 00
	Total net expenditure, 1921-22.....		1,538,650 10

REVENUE COLLECTED, 1921-22

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DETAILED STATEMENT OF SALARIES AND DISBURSEMENTS OF FISHERY OFFICERS
EXPENDITURE FOR FISCAL YEAR 1921-22

Districts	Officers		Guardians		Miscellaneous		Totals	
	Salaries	Disbursements	Wages	Expenses	\$	cts.	\$	cts.
<i>Eastern Division—</i>								
Halifax office.	12,899 00	1,340 91			856 04	15,095 95		
Nova Scotia No. 1	11,250 48	6,591 15	12,910 50		227 91	31,028 41		
No. 2	14,557 90	6,899 31	3,870 92		235 38	25,873 41		
No. 3	16,333 06	8,386 62	4,484 91		151 01	29,358 60		
							101,356 37	
New Brunswick No. 1	8,219 00	4,684 33	3,893 00	179 26	229 90	17,205 49		
" No. 2	14,962 90	7,629 66	9,065 48		193 79	31,851 83		
" No. 3	5,794 09	2,271 41	6,939 60		93 27	15,098 37		
Prince Edward Island	7,431 99	3,320 64	605 00	24 13	139 08			
							64,155 69	
Totals	91,451 42	41,124 03	41,769 41	561 66	2,129 38			11,523 84
							177,035 90	
Quebec	11,465 79	6,574 32	1,134 05	329 31	19 01			
<i>Central Division—</i>								
Winnipeg office	3,180 00	1,021 34			43 25			
Manitoba	6,285 62	3,067 49	215 16		61 20			
Saskatchewan	10,437 66	4,235 87	215 00	407 30	34 70			
Alberta	7,695 83	4,366 14	122 50	262 75	26 70			
							15,330 53	
Totals	27,599 11	12,690 84	552 66	899 25	165 85			12,473 92
							90,079 25	
British Columbia Division—								
Vancouver office	16,617 90	1,550 80			3,250 10	21,418 80		
British Columbia No. 1	11,342 67	6,593 45	2,558 03		554 51	21,926 61		
No. 2	12,247 93	2,958 93	2,049 52		684 76	18,464 04		
No. 3	14,340 00	4,736 25	7,432 59	1,657 41	103 55	28,269 80		
							90,079 25	
Totals	54,548 50	15,839 43	12,040 14	3,058 26	4,592 92			90,079 25
General Account	385 00							25,084 27
								25,084 27
<i>SUMMARY</i>								
Eastern Division	91,451 42		41,124 03	41,769 41	561 66	2,129 38		
Quebec	11,465 79		6,574 32	1,134 05	329 31	399 01		
Central Division	27,599 11		12,690 84	552 66	165 85			
British Columbia Division	54,548 50		15,839 43	12,040 14	4,592 92			
General Account	385 00				25,084 27			
								25,084 27
Totals	185,449 82		76,228 62	55,496 26	4,848 48	32,371 43		
								351,394 61

EXPENDITURE FOR FISCAL YEAR 1921-22—(*continued*)
SUMMARY

Vessels	Pay list		Board or Provisions		Fuel		Repairs		Supplies		Clothing		Miscellaneous		Totals			
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.		
Eastern Division	30,721	85	38	22	7,990	87	1,053	39	1,318	60	1,579	98	740	92	2,240	07	47,994	80
Quebec.	15,589	86	6,075	72	13,393	23	4,496	30	2,896	32	1,702	74	1,420	46	963	32	3,409	27
Central Division	10,606	22	2,552	73	7,016	98	941	10	396	85	528	99	599	79	617	09	364	77
British Columbia Division	90,957	39	9,740	59	33,192	25	17,375	39	11,190	28	5,922	27	6,090	93	2,474	24	54,797	01
General Account	147,875	32	18,407	26	61,593	33	23,866	18	15,794	05	10,472	90	9,691	16	4,795	57	60,937	74
Totals																	353,463	51

DETAILED STATEMENT OF FISH CULTURE

EXPENDITURE, FISCAL YEAR 1921-22

Hatcheries	Salaries	Labour	Mainten- ance	Totals of Hatcheries	Totals of Provinces
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<i>Nova Scotia—</i>					
Bedford.....	1,000 00	105 00	1,928 75	3,033 75	
Isaac's Harbour.....		32 50		32 50	
Lindloff.....		68 92	610 70	679 62	
Margaree hatchery.....	3,405 00	521 30	2,351 80	6,278 10	
Margaree Pond.....		1,168 89	2,254 50	3,423 39	
Middleton.....	2,032 90	667 51	2,177 31	4,877 72	
Windsor.....	1,260 00	509 60	1,152 42	2,922 02	
Totals.....	7,697 90	3,073 72	10,475 48	21,247 10	21,247 10
<i>Prince Edward Island—</i>					
Kelly's Pond Hatchery.....	1,968 39	185 00	2,151 19	4,304 58	4,304 58
<i>New Brunswick—</i>					
Buctouche.....		10 00		10 00	
Grand Falls.....	2,130 00	662 80	2,773 68	5,566 48	
Miramichi Hatchery.....	2,820 00	157 50	1,283 88	4,261 38	
Miramichi Pond.....		1,559 75	2,491 93	4,051 68	
Nepisiguit.....		356 87	46 49	403 36	
New Millis Pond.....		1,863 77	4,008 93	5,872 70	
Restigouche.....	2,820 00	679 49	2,351 40	5,850 89	
Sparkle.....		380 59	159 90	540 49	
St. John Hatchery.....	1,581 45	2,257 04	3,779 20	7,617 69	
" Pond.....		2,422 50	7,880 61	10,303 11	
" Shad.....		26 00		26 00	
Tobique.....		199 02	268 82	467 84	
Totals.....	9,351 45	10,575 33	25,044 84	44,971 62	44,971 62
<i>Quebec—</i>					
Gaspé.....	2,700 00	3,076 73	3,301 65	9,078 38	
Tadoussac.....	1,500 00	4,319 63	3,854 18	9,673 81	
York Pond.....			20 00	20 00	
Totals.....	4,200 00	7,396 36	7,175 83	18,772 19	18,772 19
<i>Ontario—</i>					
Coltingwood.....	3,645 00	2,190 57	7,001 89	12,837 46	
Kenora.....	2,993 57	4,480 25	4,560 08	12,033 90	
Kingsville.....	3,795 00	1,521 50	4,464 93	9,781 43	
Port Arthur.....	2,760 00	1,463 50	1,704 10	5,927 60	
Sarnia.....	3,558 75	2,367 50	5,302 03	11,228 28	
Southampton.....	2,247 58	1,287 49	2,467 60	6,002 67	
Thurlow.....	5,085 00	3,630 12	6,328 19	15,043 31	
Wiarton.....	3,960 00	1,370 35	2,218 37	7,548 72	
Totals.....	28,044 90	18,311 28	34,047 19	80,403 37	80,403 37
<i>Manitoba—</i>					
Dauphin River.....	1,810 16	4,801 23	3,212 01	9,823 40	
Dauphin River spawn camp.....		1,600 75	730 05	2,330 80	
Gull Harbour Hatchery.....	2,760 00	2,591 16	2,200 24	7,551 40	
Winnipegosis.....	1,889 76	6,509 39	5,745 94	14,145 09	
Totals.....	6,459 92	15,502 53	11,888 24	33,850 69	33,850 69
<i>Alberta—</i>					
Banff.....	3,375 00	909 75	3,890 33	8,175 08	
Spray Lakes.....		1,347 50	433 75	1,781 25	
Totals.....	3,375 00	2,257 25	4,324 08	9,956 33	9,956 33
<i>Saskatchewan—</i>					
Qu'Appelle.....	1,330 00	2,446 51	2,380 49	6,157 00	6,157 00

EXPENDITURE, FISCAL YEAR 1921-22—Continued

Hatcheries	Salaries	Labour	Maintenance	Totals of	Totals of
				Hatcheries	Provinces
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<i>British Columbia—</i>					
General account.....	6,310 00	172 17	11,148 02	17,630 19	
Anderson Lake.....	1,560 00	2,556 38	3,771 35	7,887 73	
Babine.....	1,430 00	2,964 48	5,373 15	9,767 63	
Cowichan.....	1,560 00	2,934 40	2,261 89	6,756 29	
Cultus.....	799 33	1,818 10	2,121 42	4,648 85	
Gerrard.....	375 00	1,555 79	1,497 99	3,428 78	
Harrison.....	1,680 00	4,307 05	8,708 42	14,695 47	
Kennedy.....	1,442 67	2,170 15	3,757 87	7,370 69	
New Westminster.....	662 90	1,156 84	1,956 33	3,776 07	
Pemberton.....	1,680 00	727 33	11,249 45	13,656 78	
Pitt.....	1,000 00	1,703 04	1,781 85	4,484 89	
Rivers Inlet.....	1,320 00	5,962 45	8,081 99	15,364 44	
Skeena River.....	1,946 45	6,252 74	8,642 36	16,841 55	
Stuart Lake.....	1,440 00	2,931 77	3,947 58	8,319 35	
Totals.....	23,116 35	37,212 69	74,299 67	134,628 71	134,628 71
General Account.....	4,020 00	50 00	4,275 34	8,345 34	8,345 34

SUMMARY

<i>Nova Scotia.....</i>	7,697 90	3,073 72	10,475 48	21,247 10	21,247 10
<i>Prince Edward Island.....</i>	1,968 39	185 00	2,151 19	4,304 58	4,304 58
<i>New Brunswick.....</i>	9,351 45	10,575 33	25,044 84	44,971 62	44,971 62
<i>Quebec.....</i>	4,200 00	7,396 36	7,175 83	18,772 19	18,772 19
<i>Ontario.....</i>	28,044 90	18,311 28	34,047 19	80,403 37	80,403 37
<i>Manitoba.....</i>	6,459 92	15,502 53	11,888 24	33,850 69	33,850 69
<i>Alberta.....</i>	3,375 00	2,257 25	4,324 08	9,956 33	9,956 33
<i>Saskatchewan.....</i>	1,330 00	2,446 51	2,380 49	6,157 00	6,157 00
<i>British Columbia.....</i>	23,116 35	37,212 69	74,299 67	134,628 71	134,628 71
<i>General Account.....</i>	4,020 00	50 00	4,275 34	8,345 34	8,345 34
Totals.....	89,563 91	97,010 67	176,062 35	362,636 93	362,636 93

SUMMARY STATEMENT OF FISHERIES EXPENDITURE BY PROVINCES

FOR FISCAL YEAR 1921-22

FISHERIES BRANCH

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Services	Nova Scotia	Prince Edward Island	New Brunswick	Quebec	Ontario	Manitoba	Alberta	Saskat- chewan	British Columbia	Yukon	General Account		Totals	
											\$ cts.	\$ cts.	\$ cts.	\$ cts.
Salaries and disbursements of F.O.	101,356 37	11,523 84	64,155 69	19,902 48	14,103 26	12,473 92	15,330 53	90,079 25	25,469 27	354,394 61				
Fisheries Patrol Service	25,150 85	5,609 52	17,234 43	49,947 22	23,624 52	.....	231,740 35	.....	126 62	353,433 51				
Oyster culture ....	.....	601 60	.....	.....	.....	.....	20,263 52	.....	.....	610 60				
Building fishways	2,387 93	10 12	26 31	25 39	326 40	.....	204 50	.....	3 24	22,681 00				
Legal and incidental expenses of Conservation and development of deep sea fisheries	659 72	47 25	332 88	125 55	315 85	355 69	.....	.....	.....	1,581 82				
Fisheries Intelligence Bureau Inspection of canned and pickled fish	70 38	848 37	1,287 31	3,011 58	3,145 13	80,403 37	33,850 69	9,956 33	577 05	18,128 79				
Fish culture	6,619 73	21,247 10	4,304 58	44,971 62	18,772 19	.....	.....	.....	.....	322 74	1,819 84			
Scientific investigations into fisheries	578 75	9,410 20	1,951 05	1,661 25	14,640 60	43,986 00	.....	.....	6,436 67	771 39	11,399 11			
Fishing bounty	91,410 20	.....	.....	.....	.....	.....	.....	.....	.....	159,449 80				
Totals	250,329 40	34,757 27	146,059 75	136,520 82	80,403 37	71,934 16	22,430 25	21,487 53	196,631 69	40,581 46	1,301,135 70			
Marine Biological board ....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	42,000 00			
Civil Government salaries ....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	83,152 69			
Contingencies ....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	23,923 91			
Cost of living bonus ....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,450,212 30		
Reclassification arrears ....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	78,676 48			
Superannuation Act, 1920, No. 4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,774 66			
Gratuities re deceased officials ....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,756 66			
											230 00			
											1,538 650 10			

APPENDIX No. III.

The following is a statement of the different kinds of licenses issued by the different Inspectors during the 1921-22 season:—

QUEBEC—J. E. BERNIER, Inspector

Kind of License—	Number issued.
Lobster packing.....	75 (5 cancelled)
Lobster extensions.....	18
Lobster fishermen's.....	614 (2 cancelled)
Herring trap-net.....	29
Cod trap-net.....	264 (4 cancelled)
Salmon fishery.....	Nil.
Quebec fishery licenses.....	1,173 (41 cancelled and 11 free)
Receipt books.....	278
	2,155 (52 cancelled and 11 free)

PRINCE EDWARD ISLAND—S. T. GALLANT, Inspector

Lobster packing.....	166 (2 cancelled)
Lobster extensions.....	83
Fish cannery.....	6
Quahaug fishery.....	1
Lobster fishermen's.....	1,448
Smelt gill-net.....	226
Smelt bag-net.....	220 (1 cancelled)
Oyster fishery.....	348
Scallop fishery licenses.....	1
Prince Edward Island trap-net.....	2
	2,418 (3 cancelled)

NOVA SCOTIA, DISTRICT No. 1—A. G. MCLEOD, Inspector

Lobster packing.....	51
Lobster extensions.....	25
Fish cannery.....	3
Nova Scotia angling permits.....	11
Lobster fishermen's.....	1,944
Smelt gill-net.....	155
Smelt bag-net.....	29
Oyster fishery.....	89
Nova Scotia trap-net.....	38
	2,320

NOVA SCOTIA, DISTRICT No. 2—D. H. SUTHERLAND, Inspector

Lobster packing.....	63
Lobster extensions.....	42
Fish cannery.....	6
Scallop fishery.....	1
Nova Scotia drag-seine.....	169
Nova Scotia salmon net.....	20
Nova Scotia angling permits	20
Lobster fishermen's.....	2,802 (1 cancelled) no refund
Smelt gill-net.....	143
Smelt bag-net.....	201
Oyster fishery.....	136
Nova Scotia trap-net.....	117
Lobster pound licenses.....	1
Nova Scotia herring weir.....	20
Lobster pound certificates...	181
	3,699 (1 cancelled)

FISHERIES BRANCH

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NOVA SCOTIA, DISTRICT No. 3—H. H. MARSHALL, Inspector

Kind of License—

	Number issued
Lobster packing.....	40 (1 cancelled)
Lobster extensions.....	52
Fish cannery.....	7
Nova Scotia angling permits.....	326 (4 cancelled)
Lobster fishermen's.....	4,342
Smelt gill-net.....	107
Smelt bag-net.....	23 (1 cancelled)
Lobster pound licenses.....	9 (1 cancelled)
Lobster pound certificates.....	676 (1 cancelled)
Nova Scotia trap-net licenses.....	156 (2 cancelled)
Scallop fishery licenses.....	201
Nova Scotia herring weir licenses.....	75
Receipt books.....	Nil
	<hr/>
	5,286 (9 cancelled)

NEW BRUNSWICK, DISTRICT No. 1—J. F. CALDER, Inspector

Lobster fishermen's.....	531
Fish cannery.....	8
New Brunswick salmon fishery.....	17
Smelt bag-net.....	Nil
Scallop fishery.....	5
New Brunswick special permits to dig soft-shell or long-neck clams.....	69
Lease of Dark Harbour, Grand Manan, N.B.....	1
New Brunswick Herring weir.....	530
Lobster pound licenses.....	7
Lobster pound certificates.....	420
	<hr/>
	1,167

NEW BRUNSWICK, DISTRICT No. 2—R. CROCKER, Inspector

Lobster packing.....	174
Lobster extensions.....	51
Fish cannery.....	2
Quahaug fishery.....	109
Lobster fishermen's.....	1,513
New Brunswick salmon fishery.....	395
New Brunswick bass gill-net.....	38
Smelt gill-net.....	189
Smelt bag-net.....	2,799 (33 free)
Oyster fishery.....	660
New Brunswick Bass fishery licenses.....	139
New Brunswick Herring Weir fishery.....	1
Lobster pound licenses.....	2
Lobster pound certificates.....	135
Special oyster permits.....	90
	<hr/>
	6,111 (33 free)

NEW BRUNSWICK, DISTRICT No. 3—H. E. HARRISON, Inspector

New Brunswick sturgeon fishery.....	4
New Brunswick whitefish fishery.....	20 (2 cancelled)
New Brunswick Salmon net permits.....	83
New Brunswick salmon fishery.....	107 (2 cancelled) no refund
Smelt gill-net.....	2
Smelt bag-net.....	Nil
New Brunswick Bass fishery.....	25
	<hr/>
	241 (2 cancelled)

MANITOBA—J. B. SKAPTASON, Inspector

Manitoba special fishery.....	1,499 (1 cancelled)
Manitoba settler's permits.....	922
Manitoba commercial sturgeon.....	88
Manitoba domestic sturgeon.....	10
Manitoba special angling permits for non-residents.....	19 (1 cancelled)
Receipt books.....	1,596 (4 cancelled)
	<hr/>
	2,538 (2 cancelled)

SASKATCHEWAN—G. C. MACDONALD, Inspector

Kind of License—

	Number issued
Domestic sturgeon.....	7
Commercial sturgeon.....	10
Saskatchewan Domestic fishery.....	92
Saskatchewan commercial and fishermen's licenses.....	477
Saskatchewan Indian and half-breed permits.....	573
Receipt books.....	586
	<hr/>
	1,159

ALBERTA—A. G. WILLSON, Inspector

Fish cannery.....	1
Angling permits.....	3,266 (7 cancelled and 6 free)
Alberta domestic fishery.....	135 (16 cancelled)
Alberta commercial and fishermen's.....	636 (1 cancelled)
Alberta Indian and Half-Breed permits.....	195
Receipt books.....	770
	<hr/>
	4,233 (24 cancelled and 6 free)

BRITISH COLUMBIA—J. A. MOTHERWELL, Inspector

Fish cannery.....	13 (4 cancelled)
British Columbia angling permits.....	51
British Columbia Indian permits.....	106 (1 cancelled)
Abalone fishery.....	2
Crab fishery licenses.....	159 (1 cancelled)
Smelt or sardine fishery.....	67
British Columbia gill-net, drift-net or drag-seine licenses operated in conjunction with power boats.....	426
British Columbia herring or pilchard gill-net or drift-net.....	57
British Columbia herring drag-seine.....	1
British Columbia herring purse-seine.....	27
Herring drag-seine or purse-seine for halibut fishing vessels.....	Nil
British Columbia sturgeon fishery licenses.....	5
British Columbia trolling licenses.....	1,495 (30 cancelled)
British Columbia salmon gill-net or drift-net.....	4,779 (1 cancelled) no refund
British Columbia salmon trap-net license.....	8
Salmon purse-seine license.....	66 (7 cancelled)
License to a captain of a salmon purse-seine boat.....	47
British Columbia salmon drag-seine.....	35 (1 cancelled)
Salmon cannery licenses.....	56
British Columbia salmon curing licenses.....	38 (4 cancelled)
Boat licenses for buy fresh salmon from fishermen.....	222
License to a person engaged in cold storage or fish packing to buy fresh salmon from fishermen.....	102 (2 cancelled)
British Columbia reduction works licenses.....	7
Whale factory licenses.....	3
	<hr/>
	7,772 (51 cancelled)

YUKON TERRITORY

Yukon special fishery.....	30 (3 cancelled)
Total number issued.....	39,129 (149 cancelled and 50 free)

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The following is a statement showing the number of prosecutions, confiscations and sales which took place in each province, during the 1921-22 season:—

Province	No. of Prosecutions	Revenue received	No. of Confiscations	Revenue from Sales
Ontario (fines).....	3	\$ 30 00	..	\$ 851 30
Quebec.....	23	250 00	19	134 46
Prince Edward Island.....	34	325 00	14	62 75
Nova Scotia—				
District No. 1.....	8	66 00	20	19 50
District No. 2.....	99	1,239 00	77	402 62
District No. 3.....	40	321 01	30	33 82
New Brunswick—				
District No. 1.....	19	232 00	57	
District No. 2.....	27	342 00	165	524 10
District No. 3.....	49	965 00	36	224 55
Manitoba.....	54	541 00	114	297 31
Alberta.....	27	142 00	20	78 30
Saskatchewan.....	37	256 00	49	585 31
British Columbia—				
District No. 1.....	59	903 50	29	2,195 91
District No. 2.....	59	545 00	49	303 09
District No. 3.....	20	195 00	20	178 80
Yukon Territory.....	Nil	.....	Nil	
Total.....	558	6,352 51	699	5,891 82

APPENDIX No. IV.

List of United States Fishing Vessels which entered Canadian Ports on the Atlantic Coast during the year ended December 31, 1921.

Name of Vessel	Tonnage	Number of Men in Crew	Number of times entered	Reasons for Entry	Quantity of Fish landed cwt.
Acushla.....	70	23	3	Shelter, bait.....	
Adeline.....	54	20	3	Shelter	
A. D. Willard.....	23	8	1	"	
Agnes.....	65	19	3	"	
Albert W. Black.....	51	11	7	" supplies.....	
Alice May.....	11	6	6	"	
Alice Wilson.....	16	7	2	"	
A. M. Doughty.....	15	9	3	"	
American.....	93	22	2	"	
Anastasia E.....	16	7	1	"	
Angeline C. Nunan.....	58	19	7	"	
Angie B. Watson.....	36	17	8	"	
Arthur James.....	95	19	1	"	
Audrey & Theo.....	15	7	1	"	
Aviator.....	210	34	3	" supplies.....	
Bay State.....	81	25	6	Landing fish, supplies.....	63
Benjamin A. Smith.....	75	25	14	Supplies, shelter, bait.....	
Benjamin W. Wallace.....	49	19	2	Shelter.....	
Bettina.....	66	17	1	"	
Catharine.....	77	27	6	Landing fish, supplies.....	61
Catharine Burke.....	68	20	10	Shelter.....	
Cavalier.....	96	22	11	Supplies, bait.....	
Commonwealth.....	93	24	8	Shelter.....	
Constellation.....	89	19	16	" supplies.....	
Corinthian.....	97	25	8	"	
Dawn.....	79	23	4	"	
Desire.....	21	10	2	" landing fish.....	7
E. A. Burns.....	14	6	2	"	
Edith Silveria.....	47	20	3	"	
Edith H. Cooney.....	12	6	6	" landing fish, supplies.....	5
Edith C. Rose.....	70	21	3	"	
E. H. M. Burns.....	18	8	1	"	
E. H. Mildred.....	41	10	1	"	
Elanor.....	36	9	2	"	
Elizabeth A.....	34	8	5	"	
Eliza A. Benner.....	14	6	2	Supplies.....	
Elizabeth M. King.....	13	8	6	Shelter.....	
Elizabeth W. Nunan.....	48	17	15	" supplies.....	
Elk.....	66	21	4	"	
Elmer E. Gray.....	71	21	4	"	
Elsie.....	98	25	7	"	
Elsie G. Silva.....	50	20	15	" supplies.....	442
Elva L. Spurling.....	49	19	4	"	
Ella and Mildred.....	41	10	1	Supplies.....	
Ellen T. Marshall.....	75	22	13	" bait, landing fish.....	173
Emelia D.....	10	6	6	" shelter, landing fish.....	9
Emerald.....	5	5	1	Shelter.....	
E. M. King.....	13	8	4	"	
Esperanto.....	91	25	4	"	
Ethel.....	14	7	8	"	
Etta M. Burns.....	18	8	5	"	
Etta Mildred.....	41	15	3	supplies.....	
Evelyn and Ralph.....	38	9	1	"	
Evelyn and Ralph.....	16	9	6	supplies.....	
Fannie E. Prescott.....	74	23	14	" supplies, bait, landing fish.....	192
Flora L. Oliver.....	59	23	10	" supplies, landing fish.....	83
Frances Lenor.....	12	5	1	"	
Frances S. Grueby.....	94	25	5	"	
Funchal.....	20	8	3	"	
Genesta.....	53	20	2	"	

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LIST of United States Fishing Vessels which entered Canadian Ports on the Atlantic Coast during the year ended December 31, 1921.—*Con.*

Name of Vessel	Tonnage	Number of Men in Crew	Number of times entered	Reasons for entry	Quantity of Fish landed cwt.
Gladiator.....	75	6	1	Supplies.....	
Good Luck.....	55	19	20	“ shelter, landing fish.....	1
Governor Marshall.....	60	21	1	Shelter.....	
Harmony.....	66	18	9	“ bait, supplies.....	
Harvard.....	72	19	1	“	
Hazel Jackson.....	26	8	2	“	
Helena.....	40	17	1	“	
Helja Silva.....	77	21	2	Supplies.....	
H. E. Murley.....	5	5	4	Shelter.....	
Henrietta.....	62	17	13	“ bait, supplies.....	
Herbert Parker.....	78	21	14	Supplies, landing fish.....	1
Hesperus.....	79	25	1	Shelter.....	
Higco.....	12	6	6	“	
Hortense.....	43	19	5	“ bait, supplies.....	
Ingomar.....	85	23	31	“ supplies.....	
Imperator.....	79	23	11	“ “ landing fish.....	16.
James R. Clark.....	36	18	5	.....
Jeanette.....	51	19	8	“ bait.....	
Joffre.....	80	25	7	“ bait, supplies.....	
John A. Casey.....	14	8	1	“	
John A. Cooney.....	14	8	4	“ supplies.....	
John J. Fallon.....	60	19	5	“ landing fish.....	49
Joseph Warner.....	11	6	7	“ supplies.....	
Judique.....	89	8	1	“	
Killarney.....	73	23	11	Supplies, shelter.....	
Lafayette.....	12	8	5	Shelter	
L. A. Dunton.....	94	23	6	“ supplies.....	
Laura Goulart.....	73	21	3	“	
Lizzie A.....	33	7	1	“	
Lochinvar.....	34	9	4	“ supplies.....	
Lois H. Corkum.....	34	12	4	“ landing fish.....	662
Louisa B. Marshall.....	74	21	3	“ supplies.....	
Louisa R. Sylva.....	92	23	10	“ “ bait.....	
Lucia.....	43	19	14	“ landing fish.....	1
Mabel E. Bryson.....	23	7	1	“	
Malicia Enos.....	8	5	5	“	
Margaret.....	72	18	4	“ supplies.....	
Marion McLoon.....	11	7	9	“ “ landing fish.....	52
Marsala.....	46	18	1	“	
Marshall Foch.....	61	23	8	Supplies, bait, landing fish.....	14
Mary E. Harty.....	77	19	1	Shelter.....	
Mary F. Curtis.....	65	23	4	“	
Mary T. Fallon.....	48	15	3	“ supplies.....	
Mayflower.....	113	25	14	“ bait, supplies, landing fish.....	73
Medric.....	189	21	1	“	
Mildred Robinson.....	73	21	14	“ supplies, landing fish.....	217
Minerva.....	13	6	9	“	
Monarch.....	83	23	10	“ “ bait.....	
Morning Star.....	85	22	5	Supplies, landing fish.....	114
Motor.....	17	9	4	“	
Natalie.....	13	6	4	Shelter.....	
Natalie Hammond.....	51	21	4	“	
Nickerson.....	9	6	2	“	
Nirvana.....	50	12	2	“	
Nyoda.....	28	12	2	“ landing fish.....	207
On Time.....	12	5	1	“	
Oretha F. Spinney.....	87	24	7	Bait, supplies, landing fish.....	
Orion.....	39	15	2	Shelter.....	
Philip P. Manta.....	43	18	2	“	
Pilot.....	18	8	2	“ supplies.....	
Pioneer.....	84	19	5	“	
Pioneer.....	53	19	4	Supplies, shelter.....	
Pollyanna.....	66	19	1	Shelter.....	
Ralph Brown.....	67	19	2	Bait, supplies.....	
Reliance.....	22	9	1	Shelter.....	
Reliance.....	9	4	4	“	
Restless.....	15	8	4	“	
Republic.....	48	19	4	Supplies, bait.....	

LIST of United States Fishing Vessels which entered Canadian Ports on the
Atlantic Coast during the year ended December 31, 1921.—*Con.*

Name of Vessel	Tonnage	Number of Men in Crew	Number of times entered	Reasons for entry	Quantity Fish landed cwt.
Reveira	23	9	1	Shelter.....	
Rex	75	23	12	" supplies, bait.....	
Rhodora	70	19	3	" bait.....	
Robert and Arthur	67	21	2	"	
Ruth	19	18	2	"	
Ruth and Margaret	77	23	4	" supplies.....	
Sadie M. Nunan	36	21	9	"	
Satellite	4	3	1	"	
Squanto	81	19	18	" supplies, landing fish....	1,350
Stiletto	91	19	4	"	
Stranger	26	8	4	"	
Sunapee	18	8	2	"	
Thelma	28	12	6	"	
Thos. S. Gorton	92	22	2	" supplies.....	
T. M. Nicholson	90	9	1	"	
Undercliff	47	8	4	" supplies.....	
Vagrant	9	7	3	"	
Victor	75	19	5	" supplies.....	
Vida McKeown	83	19	2	"	
Viking	34	16	9	"	
Waldo L. Stream	66	21	10	Supplies, bait, landing fish..	77
Waltham	44	21	10	Shelter.....	
W. H. Reid	9	4	1	"	
Woiee	9	6	4	"	
Wesley W. Sennett	11	7	7	" supplies.....	
W. W. Smith	11	6	2	"	
Yankee	96	25	1	"	

LIST of United States Fishing Vessels which entered Canadian Ports on the
Pacific Coast during the year ended December 31, 1921.

Name of Vessel	Tonnage	Number of Men in Crew	Number of times entered	Reasons for entry	Quantity of Fish landed cwt.
A. K.	7	2	8	Shelter, bait.....	
Active	4	2	1	Supplies	
Actor	7	2	2	Landing fish.....	100
Adele	4	2	2	" supplies, bait.....	20
Adeline	6	2	1	"	580
Agnes	17	5	3	Bait, shelter	
Alaska	44	15	5	Landing fish, supplies, bait....	2,780
Albatross	40	13	13	Shelter, supplies, bait, landing fish	2,560
Albatross	16	5	1	Landing fish	1,800
Alf.	28	6	1	"	140
Alfa	5	2	1	"	40
Alfa	12	5	4	" bait.....	240
Alice B.	13	5	4	" "	220
Almera	3	2	1	Supplies	
Alph.	4	3	2	Landing fish, shelter.....	120
Alten	43	15	9	" supplies.....	4,280
America	25	11	11	Bait....	
Annie	11	4	1	Landing fish.....	80
Anna J.	22	5	5	Shelter, bait.....	
Anna J. Larsen	25	11	4	Bait.....	
Antler	22	5	14	Landing fish, bait	220
Apache	4	1	1	Shelter	
Arctic	29	4	1	Landing fish.....	2,960
Arcade	14	4	12	" bait	80
Ariel	7	2	1	Shelter	
Arthur	4	2	1	Landing fish	20
Astrea	4	2	1	Shelter	
Atlas	31	17	7	Landing fish, supplies, bait	1,680
Atlantic	25	11	10	" bait	260
Augusta	19	5	1	"	1,300

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LIST of United States Fishing Vessels which entered Canadian Ports on the Pacific Coast during the year ended December 31, 1921.—Con.

Name of Vessel	Tonnage	Number of Men in Crew	Number of times entered	Reasons for entry	Quantity Fish landed cwt.
Aurora.....	20	5	1	Bait	
Aurora.....	13	5	12	Landing fish, bait..	140
Ava.....	3	2	1	Supplies.	
Avona.....	9	4	1	Landing fish	120
Baldy.....	7	2	1	"	23
Baltic.....	20	5	1	"	1,160
Bartolome.....	4	3	1	"	640
Beaver.....	17	5	1	"	42
Beaver.....	9	4	7	" bait	280
Ben.....	8	3	1	Supplies.....	
Bernice.....	4	2	2	Landing fish	60
Billie M.....	14	4	1	Supplies.....	
Bill 2.....	4	2	1	"	
Bravo.....	5	3	1	Landing fish	720
Bring Gold.....	12	4	2	" supplies	1,440
Brothers.....	13	5	2	" "	1,500
Bryan.....	15	4	1	"	620
Buckeye.....	10	3	1	Shelter.....	
Bucky.....	4	1	1	"	
C. & B. 673.....	4	2	1	Supplies.....	
California.....	20	5	6	" landing fish, bait	900
Cape Clear.....	13	4	7	" " "	680
Cape Spencer.....	11	3	1	Landing fish	240
Caroline.....	18	5	1	"	740
Castle.....	4	2	1	Shelter.....	
Castor.....	6	2	2	Landing fish	80
Cedric.....	19	3	1	"	2,160
Chancellor.....	13	4	3	" supplies	1,020
Chimera.....	9	4	12	" bait	240
Christine.....	4	2	2	"	40
Christiana.....	4	2	1	"	20
Circle H.....	4	2	1	"	220
Clara.....	6	3	1	"	200
Clara.....	4	2	1	"	40
Columbia.....	32	4	1	"	180
Comet.....	5	2	1	Supplies	
Commonwealth.....	60	17	3	" landing fish	4,540
Companion.....	9	2	5	Shelter.....	
Confidence.....	22	4	1	Landing fish	1,680
Constitution.....	39	13	14	Bait	
Convention.....	20	5	8	Bait, supplies, shelter, landing fish	1,120
Cora.....	4	2	1	Landing fish	480
Corona.....	19	5	2	"	1,580
Coyote.....	4	2	1	Shelter.....	
Crescent.....	8	4	2	Landing fish, supplies	860
Daily.....	26	6	4	" bait, supplies	1,340
Daisy.....	18	6	3	" "	1,600
Dall. 2.....	4	2	1	Shelter.....	
Decision.....	13	5	1	"	
Defence.....	20	5	7	Landing fish, supplies, bait	1,160
Defiance.....	20	5	2	Bait	
Delaware.....	8	3	1	Landing fish	180
Democrat.....	27	6	3	"	2,320
Dependent.....	5	4	1	"	60
Diamond T.....	8	2	1	"	1,020
Dick.....	10	5	9	" bait	80
Dip.....	4	2	6	" " supplies	100
Director.....	12	5	2	" supplies	1,040
Discovery.....	10	5	6	Supplies, bait	
Dolphin.....	7	2	1	Landing fish	180
Dora H.....	15	5	3	Bait	
Dorothy.....	11	2	1	Landing fish	240
Dot.....	3	2	1	Shelter.....	
Duck.....	4	1	2	Supplies	
Eagle.....	28	6	4	Landing fish, bait	6,660
Eagle.....	15	6	2	" "	480
Eagle.....	9	4	2	" supplies	1,220
Eastern Point.....	4	3	1	" "	700
Ed.....	3	2	4	Bait	
Ed. 904 K.....	3	2	1	"	

List of United States Fishing Vessels which entered Canadian Ports on the Pacific Coast during the year ended December 31, 1921.—Con.

Name of Vessel	Tonnage	Number of Men in Crew	Number of times entered	Reasons for entry	Quantity Fish landed cwt.
Edna	6	2	1	Supplies.....	
Edna L.	4	1	1	Shelter.....	
Eidsvold	15	5	6	Landing fish, bait..	100
Elaine	6	3	1	"	60
Eleanor	16	5	5	Bait.....	
Eleanor D.	8	2	1	Supplies.....	
Elfin	4	2	1	Landing fish	120
Eloise	5	2	1	"	60
Elsie	5	2	3	" bait.....	20
Emblem	4	2	1	"	220
Elsinore	23	3	1	"	340
E. Neilson	15	4	1	"	660
Evelyn	4	2	2	Shelter, supplies.....	
Evolution	17	5	11	Landing fish, bait.....	60
Fairway	19	5	3	" supplies	660
F. C. Hergert	15	13	15	" bait.....	300
Fighting Bob	3	2	3	" supplies.....	100
Fisher	14	5	1	"	1,600
Fisher	8	1	1	"	100
Flattery	10	3	1	"	220
Flamingo	13	5	5	Bait, supplies.....	
Filiver	5	1	1	Shelter.....	
Flo	4	1	1	"	
Florence	38	11	7	Landing fish, bait.....	620
Fortuna	21	5	3	"	360
Forward	18	5	5	"	1,420
Fram	4	2	2	" supplies.....	240
Get the Hook	10	2	1	"	100
Glacier	12	4	1	"	500
Gladstone	23	6	1	"	840
Gony	12	5	6	" supplies, bait..	300
Golden North	19	5	1	"	160
Grant	5	2	2	"	160
Grayling	15	5	11	" bait	880
Groth	7	3	9	" " supplies.....	260
H. & R.	4	3	1	Landing fish.....	700
Hanna	11	5	4	Supplies, bait.....	
Happy	12	4	1	Landing fish.....	700
Harding	19	5	7	Bait.....	
Harvester	15	5	4	Landing fish, supplies ..	240
Harry	7	2	1	Shelter.....	
Hazel	24	5	1	Bait	
Hazel	7	4	2	" landing fish	230
Helen A.	8	3	1	Landing fish	120
Helen D.	8	3	2	"	320
Helena	15	4	1	"	320
Helgeland	56	15	2	" Bait.....	3,020
Hicks	7	2	1	Supplies.....	
Hilda	10	3	2	Landing fish	680
Hi Gill	6	4	1	"	820
Holdal No. 2	4	4	1	"	720
Hope	7	2	2	"	29
If. 2.	4	1	1	Shelter.....	
Igloo	11	1	1	Landing fish	260
Imperial	19	5	15	" bait.....	140
Inverness	16	5	1	"	100
Irene	8	3	1	Bait.....	
Iris	9	3	1	Landing fish	20
Jean	9	2	1	Supplies.....	
Jeannette	6	2	3	" Landing fish, bait....	260
Jennie	16	3	2	Shelter.....	
Jennie F. Decker	16	5	17	Landing fish, bait.....	640
Johanna	16	5	2	" supplies.....	740
J. P. Todd No. 1	4	2	1	"	340
J. P. Todd No. 2	12	5	2	" supplies.....	680
June	15	4	2	"	1,020
June	7	1	1	"	40
June	4	1	1	"	20
K. 736	4	2	1	Landing fish	40

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LIST of United States Fishing Vessels which entered Canadian Ports on the Pacific Coast during the year ended December 31, 1921.—*Con.*

Name of Vessel	Tonnage	Number of Men in Crew	Number of times entered	Reasons for entry	Quantity Fish landed cwt.
Katella.....	16	5	3	Bait.....	
Kayak.....	8	3	9	"	
Kaydee.....	5	2	1	Supplies.....	
Kennebec.....	4	3	1	Landing fish.....	300
King & Wing.....	97	19	3	" supplies.....	3,040
Kodiak.....	38	13	19	" " bait.....	4,300
681 L.....	2	1	1	Landing fish.....	4
Lansing.....	16	5	1	"	580
La Paloma.....	14	11	24	" bait, supplies.....	1,160
Laura.....	7	3	2	" supplies.....	380
Lebanon.....	14	5	10	" bait.....	260
Lenore.....	14	4	1	"	780
Leonine.....	24	5	1	Shelter.....	
Liberty.....	44	15	8	Landing fish, bait.....	2,240
Lief No. 2.....	21	4	1	"	980
Lincoln.....	23	5	13	" bait.....	1,240
Lincoln.....	4	3	1	"	320
Louise.....	16	5	10	Bait.....	
Lovera.....	4	2	1	Landing fish	540
Lumnen.....	10	4	1	"	780
Mackerel.....	8	2	1	Landing fish.....	440
Madeline J.....	21	5	2	Bait.....	
Mars.....	9	4	2	Landing fish, supplies.....	760
Margaret.....	5	2	3	"	47
Margaret No. 1.....	12	3	1	"	220
Margaret T.....	10	4	2	Bait.....	
Mary.....	16	8	17	" landing fish.....	380
Mary.....	5	3	1	Shelter.....	
Mary.....	3	1	1	"	
Mary L.....	7	2	1	Landing fish.....	12
Mermaid.....	19	5	13	Supplies, bait.....	
Mildred.....	19	8	14	Bait.....	
Mildred No. 2.....	31	8	7	" landing fish.....	60
Mine.....	6	2	1	Shelter.....	
Minnie Berna.....	10	4	1	Bait.....	
M. K.....	4	2	2	Supplies, bait.....	
Molde.....	7	3	9	Bait.....	
Mongolia.....	25	4	1	Landing fish	240
Moringen.....	17	6	1	"	580
Myra.....	4	3	1	"	320
Myrtle.....	9	4	8	" bait.....	240
National.....	20	5	13	Landing fish, supplies, bait.....	180
New England.....	70	27	3	"	3,700
New Zora.....	26	4	1	"	880
Nidaross.....	23	5	2	" supplies, bait.....	1,920
Nomad.....	15	4	6	" " "	220
Nootka.....	30	4	1	Bait.....	
Norland.....	19	6	1	Landing fish	1,220
Norma.....	6	3	1	"	800
North.....	9	3	10	Bait, shelter.....	
North Cape No. 2.....	4	3	1	Landing fish	40
North Pole.....	4	2	1	"	60
Nuzon.....	19	4	1	"	800
Ocean.....	18	5	1	Bait.....	
Ocean Wave.....	10	2	1	"	
Olympic.....	30	11	1	Landing fish	2,140
Omany.....	34	13	1	"	3,000
Onah.....	18	5	6	" supplies, bait.....	540
Orient.....	48	13	13	" " "	2,660
Pacific.....	26	11	16	Landing fish, bait.....	220
Pal.....	4	2	1	Supplies.....	
Panama.....	34	13	13	" bait, landing fish.....	6,220
Pegge.....	4	4	1	Landing fish	60
Pelican.....	17	5	2	" supplies.....	1,080
Pershing.....	18	5	14	Bait.....	
Phoenix.....	15	2	1	Landing fish	660
Pilot.....	9	3	1	"	100
Pioneer.....	48	15	1	"	4,020
Pioneer No. 3.....	26	5	10	" bait.....	440

LIST of United States Fishing Vessels which entered Canadian Ports on the Pacific Coast during the year ended December 31, 1921.—Con.

Name of Vessel	Tonnage in Crew	Number of Men	Number of times entered	Reasons for entry	Quantity of Fish landed
Pirate.....	20	4	1	Landing fish.....	cwt. 720
Polaris.....	45	15	6	“ supplies.....	4,140
Portage.....	4	2	1	Shelter.....	
President.....	24	6	6	Landing fish, bait.....	220
Preslio.....	14	5	2	Bait.....	
Presto.....	14	5	1	Supplies.....	
Primrose.....	3	1	1	Bait.....	
Prospector.....	50	15	1	Landing fish.....	2,580
Progress.....	5	2	1	Shelter.....	
Puget.....	4	1	1	“.....	
Queen.....	15	3	1	Landing fish.....	40
Queen.....	4	1	1	Shelter.....	
Rainier.....	4	3	1	Landing fish.....	460
Rambler.....	10	5	1	“.....	140
Reform.....	4	3	1	“.....	420
Regal.....	3	1	1	Shelter.....	
Reliance.....	14	4	1	Landing fish.....	1,260
Reliance No. 1.....	19	6	2	“ supplies.....	1,840
Reliance.....	7	3	2	“ “.....	1,040
Republic.....	51	16	7	“ “.....	7,880
Rescue.....	6	3	1	“.....	100
Restitution.....	24	5	4	“ supplies, bait.....	700
Roald.....	12	2	1	Supplies.....	
Roald Amundsen.....	16	5	1	“ landing fish.....	260
Roamer.....	5	2	1	Bait.....	
Rolf.....	10	4	1	Landing fish.....	900
Rolfe.....	3	1	4	Shelter, bait.....	
Rolph.....	6	3	1	Supplies.....	
Roosevelt.....	13	5	9	“ bait, landing fish.....	240
Roasario.....	16	5	11	Landing fish, bait.....	300
Royal.....	15	5	1	Bait.....	
Ruth.....	5	2	1	“.....	
Sadie K.....	13	5	1	Landing fish.....	420
Salmon.....	20	5	1	Shelter.....	
Sammy.....	8	3	9	Landing fish, supplies, bait.....	200
Samson.....	7	3	2	“ “ “.....	980
Scandia.....	79	19	5	“ “ “.....	1,880
Scapp.....	11	2	2	Shelter, bait.....	
Scout.....	4	2	2	Landing fish, bait.....	40
Seabird.....	14	3	1	“.....	260
Seattle.....	55	14	7	“ supplies, bait.....	4,280
Sea Lion.....	6	2	1	“.....	60
Selam.....	3	5	1	“.....	3
Selca.....	18	3	1	“.....	240
Senator.....	11	11	5	“ supplies, bait.....	2,240
Sentinel.....	21	6	5	“ bait.....	1,920
Service.....	37	7	1	Supplies.....	
Seymour.....	44	15	1	Landing fish.....	2,420
Sherman.....	18	5	1	“.....	1,280
Signal.....	13	4	1	“.....	420
Siloam.....	16	8	16	“ supplies, bait.....	1,340
Silver Wave.....	12	3	1	“.....	20
Sirius.....	17	2	1	“.....	360
Sitka.....	50	15	1	“.....	660
Speculator.....	9	3	4	“ supplies.....	960
Spencer.....	17	5	2	“ “.....	1,420
S. & S.....	4	3	1	“.....	280
Stamsund.....	14	3	1	“.....	1,580
Stanley.....	15	5	1	“.....	280
Star.....	12	4	1	“.....	1,600
Star.....	7	3	2	Supplies.....	
Stranger.....	6	2	1	Landing fish.....	80
Success.....	4	3	1	“.....	200
Sumner.....	24	13	1	“.....	920
Sun Wing.....	15	5	4	Supplies, bait.....	
Suomni.....	8	2	1	Landing fish.....	100
Superior.....	16	5	5	“ bait.....	180
Swift.....	7	2	1	Bait.....	
Swiftsure.....	22	5	2	“ landing fish.....	820

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LIST of United States Fishing Vessels which entered Canadian Ports on the Pacific Coast during the year ended December 31, 1921.—*Con.*

Name of Vessel	Tonnage in Crew	Number of Men	Number of times entered	Reasons for entry	Quantity of Fish landed
T. 524.....	4	2	1	Landing fish	cwt. 60
T. 802.....	4	3	1	“	40
T. 966.....	3	1	1	Shelter.....	
T. 981.....	4	1	1	Landing fish	20
Tahoma.....	18	11	4	“ supplies, bait.....	980
Taku Jack.....	9	2	1	Shelter.....	
Tani.....	3	1	5	“ landing fish, bait.....	5
Tatoosh.....	24	6	2	Landing fish, bait.....	1,880
Teddy J.....	13	4	1	“	1,560
Tell.....	4	2	1	“	60
Texas.....	16	5	9	“ bait.....	140
Texas.....	4	2	1	Shelter.....	
Thelma M.....	7	2	1	Landing fish.....	200
Thelma No. 2.....	26	5	6	“ supplies, bait.....	60
Thor.....	4	2	1	“	40
Tillicum.....	21	5	12	“ bait.....	80
Tom and Al.....	57	15	6	“ “ supplies.....	6,400
Tordenskjold.....	39	19	10	“ “ “	3,280
Tremont.....	10	4	1	Bait.....	
Trio.....	19	5	5	Landing fish, supplies, bait.....	360
Tyee.....	12	4	3	“ bait.....	1,120
Umatilla.....	8	3	3	Landing fish, bait.....	120
Unimak.....	10	3	1	“	180
Uranus.....	15	5	4	“ bait.....	980
Valera.....	6	2	3	Shelter, supplies, bait.....	
Valid.....	8	3	5	Landing fish, supplies, bait.....	340
Valorous.....	21	4	1	Shelter.....	
Vansee.....	43	15	12	Landing fish, supplies, bait.....	3,160
Venus.....	4	3	1	“	600
Verna A.....	4	2	1	Shelter.....	
Vesta.....	13	4	3	Landing fish, supplies, bait.....	1,720
Victor.....	3	1	1	“	20
Viking.....	6	3	2	“ supplies.....	1,300
Virginia.....	33	6	2	“	2,000
Vivian.....	9	4	1	“	380
Vivian.....	5	3	1	“	60
Volunteer.....	19	5	13	“ bait.....	420
Wabash.....	6	3	1	Landing fish.....	100
Wasa.....	9	2	1	Shelter.....	
Washington.....	24	11	5	Landing fish, supplies, bait.....	1,460
Washington.....	15	5	3	“ bait.....	740
Wave.....	7	3	1	“	800
Ways.....	7	3	1	“	80
Westfjord.....	17	5	4	“ bait.....	340
White Star.....	17	4	1	“	660
Wildwood.....	13	2	1	“	40
Wilhelmina.....	17	5	12	“ bait.....	220
Wireless.....	19	5	16	“ “ supplies.....	240
Wilson.....	19	5	6	“ “	380
Woodrow.....	23	5	9	“ “ supplies.....	440
Yakutat.....	41	13	18	Landing fish, supplies, bait.....	3,240
Yankee.....	10	3	1	“	80
Yellowstone.....	20	5	4	“ supplies, bait.....	560
Yule.....	6	2	3	“ “ “	60
Zebellos.....	10	5	1	Bait.....	
Zilla May.....	56	15	1	Landing fish.....	360
Zora.....	15	5	1	“	360

